

Bush Mates



A GUIDE TO THE WILDLIFE OF NELSON BAY

Michael Smith

BUSH MATES

A Guide to the Wildlife of Nelson Bay

Michael Smith

Many events in nature occur with surprising predictability. Only by keeping records of what you see happening, will you become convinced of this regularity.

This book is based on 16 years of observations. It goes some of the way in documenting the annual bird and fish migrations, as well as the flowering of our plants and the life cycles of our animals.

There are many worthy arguments for keeping such records. A number of people from the Timelines Hunter Group are doing just that. One possible outcome is to discover a more meaningful set of seasons to replace the ones transported from England, those of summer, autumn, winter and spring. By all means organise and share your observations with others. In time you will be able to derive great satisfaction from being able to tell the date to within a few weeks just by observing the happenings in the bush. Watching the seasonal changes on your own patch of ground trains you to be observant. You will begin to live more attentively to place.

In his book *The Dreamtime*, Charles Mountford says, "The Aborigines have developed a calendar, based on the movement of the heavenly bodies, the flowering of certain trees and grasses, the mating of the local birds, and the arrival of migrant ones. All these signs are related to the food-cycles on which their living depends".

A century ago Alfred Howitt commented that the Bigambul people of the Macintyre and Gwydir River region measured seasonality by the flowering of trees. "The seasons are reckoned by the Bigambul according to the time of year

in which the trees blossom. For instance, *yerra* is the name of a tree which blossoms in September hence that time is called *yerra-binda*. The Apple tree (*Angophora*) flowers about Christmas time, which is *niga-binda*. The ironbark tree flowers about the end of January which they call *wo-binda*. They also call this time, which is in the height of summer, *tinna-koge-alba*, that is to say the time when the ground burns the feet".

You can use this book outside the Port Stephens area by applying Hopkin's Law which states that any given phenological event differs by four days for every degree of latitude, one and a quarter days for each degree of longitude and one day for each 30 metres of altitude.

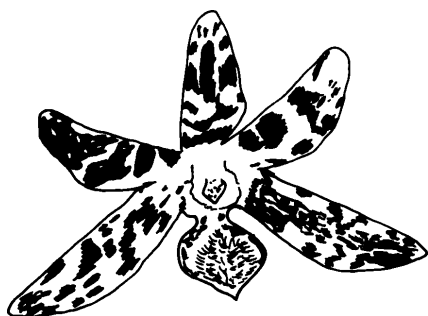
Bush Mates is designed to be a companion edition to my book *Bushwalks around Port Stephens*. It is hoped that the sketches and descriptions on the following pages will help stimulate an interest in the natural events, and characters of the bush.

Contents

Weekly events: January to December	2-97
Crux-Clock: tell time from the southern cross	98
Astrolabe	100
Sundial	101
Planisphere	102
Flow chart: a guide to mammal identification	105
Mammals	107
Frogs	108
Snakes	109
Bush tucker	110
Wild teas	112
Orchids	113
Useful plants	114-118
Vegetation types	119
Geology	120
Weather	121
Birds	122-125
Aborigines	126
Tracks	128
Bibliography	130
Index	131

January 1st-8th

- * This is a month of moulting, the casting of fur, feathers, skin, leaves and bark.
- * Gynea lily sends up flowering spikes. They will take months to form.
- * January is the peak time for snake births, 90% will die in the first year.
- * Scribbly gums have finished moulting and have clean snowy/creamy bark.
- * Dragonflies mate.
- * Toad fish are washed up on the beaches.
- * Banksia flowers drip nectar on the ground.
- * Suggested new year's resolution; keep a diary (like this one) of insects, birds, flowers, wind, rain and natural happenings.



HYACINTH ORCHID, *Dipodium punctatum*, an especially attractive orchid that chooses to flower, usually near the tops of our rocky hills, during this hot, dry time of year.

The flowers, which can number up to sixty blooms, are pink to dark-mauve with red spots. This orchid is a saprophyte which lives off a subterranean fungi which forms on buried leaves and other decaying vegetable matter. The thick, fleshy roots are edible and seem to get enough nourishment from the surrounding fungi to be able to dispense with having leaves.

Thus the dark flower and stem are all you will see, giving the plant a stark appearance. The unusually large tuberous roots can be eaten raw but the flavour improves after baking.

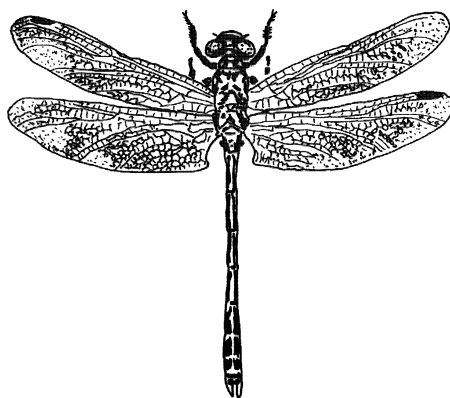


DRAGONFLIES, *Anisopetra*, can be seen flying around, particularly near water. At this time of the year every dragonfly you see will be either coupled in flight, mating, or looking for a mate. The one on top is the male. After mating the female lays eggs in plant material, or on the water.

Young dragonflies are called nymphs and feed on freshwater invertebrates. Sometimes called "horse-stingers" or "devils darning needles" they are harmless to people. "Mosquito-hawk" is a better name for this merciless predator of the air. Adults, which live only a few weeks, prey on flying insects which they catch on the wing.

Dragonflies have large eyes, small antennae, long slender abdomens and 2 pair of wings. Damselflies hold their wings vertically when at rest, while dragonflies hold them horizontally.

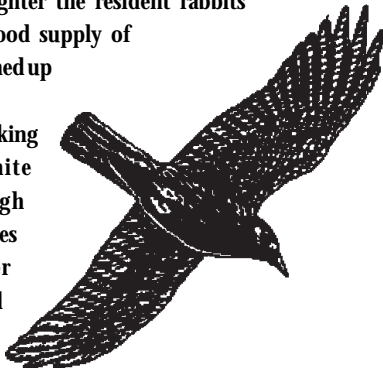
When examining a dragonfly look at the huge eyes, lacework of veins on the wings and the spiny grasping legs. They also have three sets of jaws. The front pair are mandibles used for biting and chewing. The next set, the maxillae, contain the taste organs. The third pair are joined to form the lower lip.



AUSTRALIAN RAVEN, *Corvus coronoides*,

is a big black bird interested in carrion and insects. The mournful call is a characteristic aah-aah-aahaah, dropping in pitch at the end. Ravens pair off and stay together, in their territory, for life. The nest is a stick basket high in a tree overlooking the territory. Eggs are laid in July and the young leave the parent's territory by January to join a nomadic flock. A good place to see ravens is on the trees backing Stockton Beach. Each night, foxes cross the sandhills to slaughter the resident rabbits and there is a good supply of carrion from washed up birds and fish.

A similar looking bird is the white winged chough which has red eyes and a narrower down-turned beak.

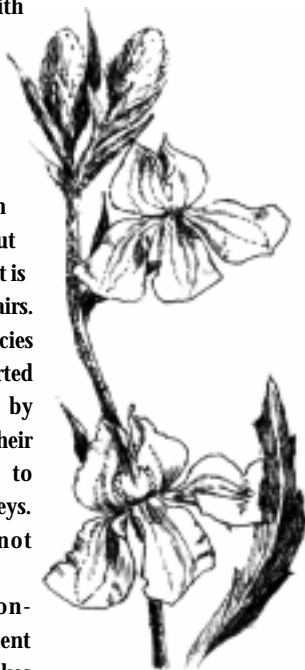


STAR-HAIRED GOODENIA, spiked

goodenia, *Goodenia stelligera*, lots of these low-growing, yellow-flowered plants can be seen in open, wet, sunny areas. The yellow, stalked, flowers are covered with rust coloured hairs on the outside. Long leaves form a rosette about the base of the plant. The flower compacts its pollen prior to squeezing it out onto the petals where it is held in place by stiff hairs.

One of the species of *Goodenia* was reported to be administered by Aboriginal women to their babies to help them to sleep on long journeys. Which species is not known.

It is the non-symmetrical arrangement of the petals that makes this yellow flower easy to recognise.



January 1st-8th

HUMAN BEING, *Homo sapiens sapiens*

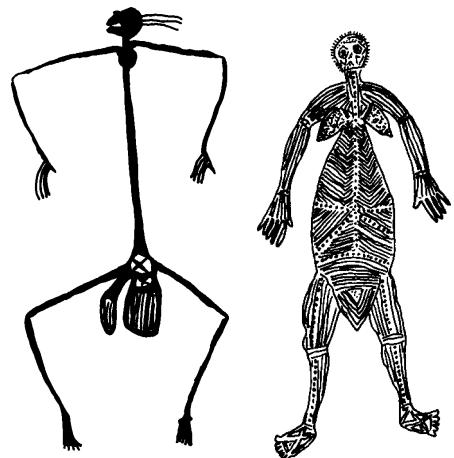
Aboriginal names koor-ee (man), kidn (woman). This time of year there is a great migration of humans to the Nelson Bay area, increasing the population from about ten thousand permanent residents to over thirty thousand. They come here to rest and renew their spirits. All the food that they require for their stay has to be harvested elsewhere and brought in. This relative overcrowding could cause fights and social troubles, so they have evolved rules of behaviour.

Human beings have the most highly developed brain of any animal. They have the ability to speak, are highly adaptable and inquisitive. Human beings are mammals (they have a backbone, hair, four limbs, a constant body temperature and the females produce milk for their young). Humans, like apes and monkeys, are in the order of primates. They are the only living members of a genus called "Homo", the Latin word for "human being". The species is "sapiens", meaning wise.

Some characteristics of *Homo sapiens* are large eyes, large brain and the fingers have an opposing thumb. They stand and walk upright on two legs and are long lived (about 75 years). Appearing on earth about 450,000 years ago there has been virtually no change in the species in the last 40,000 years.

Courtship displays can be seen on Saturday night at the RSL Club. At play they are best observed at the sportsground, around Nelson Bay harbour and on Samurair Beach.

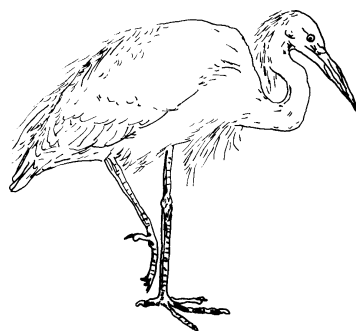
Observe, take notes and draw conclusions as this complex species is worthy of study. They care for their young and sometimes mate for life.



January 9th-16th.

- * Mountain devils in flower.
- * Young ravens leave their parents' territory to establish a territory of their own.
- * Baby koalas are born.
- * Sarsaparilla vine *Smilax glyciphylla* is in fruit (blue berries).
- * Young sugar gliders leave their parents to fend for themselves.
- * Eastern grey kangaroos give birth.
- * Goannas lay eggs in termite nests in trees.
- * Bluebottles wash up on the beaches.
- * Tern and dotterel chicks can be seen running across the sand.
- * Scorpion flies appear around flowers, the male offers the female a fly.

GOOSE BARNACLES, *Lepas anatifera*, can be found attached to any fixed or free moving object in salt water. If your boat has been moored for too long they will cover the underwater section of the hull. This is usually prevented by painting on a coat of toxic "anti fouling" paint. A walk along Stockton Beach will reveal logs and fishing floats with colonies of stalked goose barnacles attached. When undisturbed and underwater the barnacle rhythmically sweeps the water with a fan shaped mesh to catch floating food particles.



WHITE EGRET, *Egretta Aaba*, can be found around the edges of lakes, swamps, estuaries and mangroves. With stylishly long legs and neck it can be seen waiting in the shallows to stab its beak at any aquatic creature. Occasionally, they will land on moored fishing trawlers in Nelson Bay harbour to pick the nets clean or snaffle an undersized cast off. Egrets and all wetlands birds are being studied at the Shortland Wetland Centre.

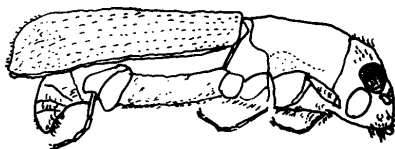
In the breeding season this bird, also called the large egret, has long nuptial plumes which were once sought for ornaments on ladies' hats. The nearest breeding colonies are at Shortland and Seaham.



AMBROSIA BEETLE, *Astraplatus inkomptus*. This brown 6mm long insect attacks living trees. The ambrosia beetle tunnels into the heartwood of trees, and feeds on fungus on the tunnel walls that it creates (ambrosia - food of the gods). Both the beetle and the fungus depend on each other. One couldn't exist without the other. The tunnels are 2mm diameter and straight across the grain. It attacks the living tree which, in response, produces kino to protect its wounds.

After 4 years an adult emerges from the trunk of the tree, takes flight and looks for a mate. At breeding time the male emerges first from each exit hole.

This horizontal borer causes flaws in sawn timber, and is one of our few "native pests".



EAR SUNDEW, *Drosera peltata*.

These carnivorous plants live in boggy, sandy areas with low nitrogen levels in the soil. To augment their diet they have developed sticky hairs to trap insects. The bodies of the insects provide the plant with nitrogen. The sticky secretions resemble dew drops, or nectar which attract the insects. Upon landing the insects become firmly stuck and struggling only enmeshes them further. The plant exudes a digestive enzyme to absorb nutrients from its victims.

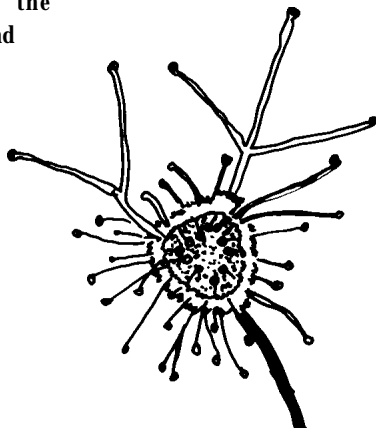
The Mirid bug has adapted to wandering over the sundew plant without becoming stuck. It looks for entrapped struggling insects, inserts its piercing mouthparts into the now twice condemned victims, and extracts the body fluids. Despite being robbed, the sundew still gets some nitrogen for its efforts - from the droppings of the mirid bugs.

You will have to get your nose close to the ground to appreciate this hardy herb. Firstly enjoy the display of thousands of glistening diamonds that make up the lure. Examine the branches for victims both recent and old. Finally touch the sticky drops and slowly pull your finger away. The "dews" become fine, stringy "spider webs".

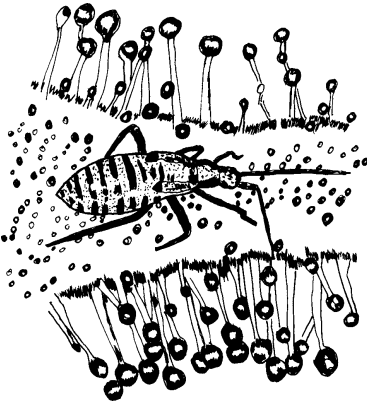
Ear sundew are probably our most common carnivorous plant. They can be seen in open, wet areas and are all over Stephens Peak.

Being low to the ground, green and brown, these curiosities are difficult to see unless you look specifically for them.

On the eared sundew, sticky globules on the end of



The mirid bug



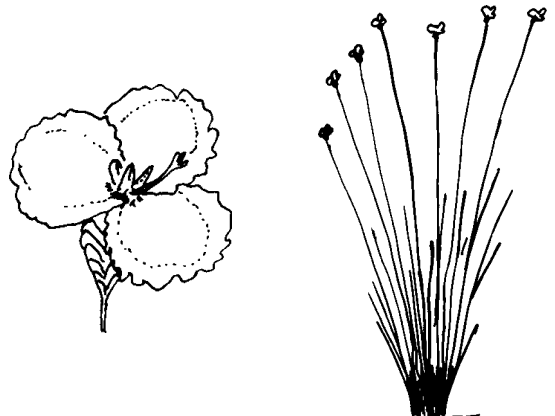
thin stalks radiate out in a star pattern. The term "ear" comes from the two extra long forked hairs that emerge from the upper left and right sides. A small white flower is produced in the spring and summer.

There is a lesson in life to be learned from this plant. It is perfectly at home in this tough environment. You cannot do it a favour by making its life easier. If you were to fertilize the ground it would die and other plants would take its place. All plants select their own patch of "paradise" that suits them perfectly.

The "dew" of this plant contains a protein-digesting enzyme. In India the leaves of this plant are mashed, sometimes with salt and applied to the skin to raise a blister as a counter irritant. This digesting ability of the juice has also been used to remove warts and corns.

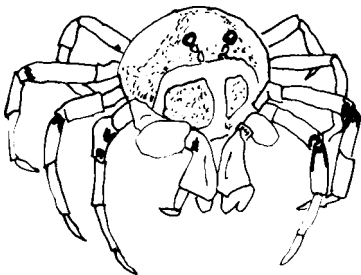


TALL YELLOW EYE, *Xyris operculata*, a slender erect herb with a 3-petaled flower, common to open moist areas. The large yellow petals are usually crinkled and ragged around the edges and emerge from a brown cone below. The leaves are slender sharp and grass-like, growing from the base of the plant. The word *xyris* is greek for "cutting knife", from the sword-shaped leaves.



January 17th-24th

- * Christmas bells flower in the wetlands.
- * Big mud wasps fly about, building nests.
- * Mutton bird chicks hatch on Broughton Island.
- * A good time to take cuttings from native plants (except acacias or eucalypts). Cut just under the node on new growth.
- * Green tree frog is breeding.
- * Snakes escape the heat by hiding in deep crevices.
- * Swifts feed on flying ants.
- * Grebes build floating grass nests in the wetlands.
- * Millions of pilchards died along the Australian east coast in 1999.



SOLDIER CRABS, *Mictyris longicarpus*, can be seen on exposed sand flats at low tide. They congregate in large numbers (armies).

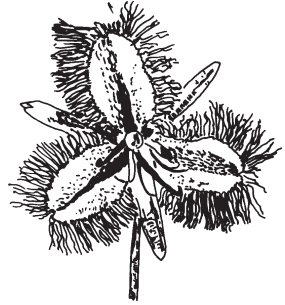
Corrie Island is a good place to watch their antics. They will suddenly pop up from under the sand and walk forwards, towards the water, feeding on surface organic fragments. If undisturbed they will wander up to half a kilometre.

When threatened they disappear by corkscrewing into the sand. They dig down with the legs on one side whilst walking backwards with the legs on the other side.

FRINGED VIOLET Common fringe lily, *Thysanotus tuberosus*, an erect herb with a dazzling pink, fringed flower. A violet only in colour, it is a member of the lily family. The three petals are finely fringed. The leaves are short and grass-like.

The stem is long and slender, further accentuating this superbly crafted flower.

After the flower is fertilised the fruit forms as a small round capsule, which eventually splits to release several black seeds. The roots of this lily are tuberous, and can be eaten.



PUFF BALL, *Lycoperdon pratense*.

These odd, and faintly loathsome fungi just love to be stomped on. This is exactly what they need to send the millions of spores (green, powdery and spherical) to the wind for dispersal.

Puff balls start off spherical, white and cheesy and develop into a wrinkled olive brown, two to four centimetres across. A young plant is covered in powdery scales and at the other end of its life it develops a hole to release the spores.

These fungi grow on the ground and amongst grass. It is considered edible when young. It appears twice a year: December to January and April to July.



NATIVE STATTUS , *Burmannia disticha*.

To find this unusual flower you will have to wander about, or in, the swamps. At such times you are more likely to see snakes than this little Aussie gem. Clusters of about five blue-purple flowers, each lipped with yellow, grow from the top of a slender stalk. These flowers are up to 6cm long and the whole plant is 60cm high. They can be found in the swamp behind Harbourside Haven, Shoal Bay.



DEATH ADDER, *Acanthopis antarcticus*.

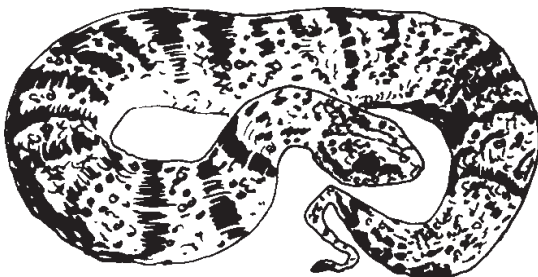
The Aboriginal name is moonulgoon.

Summer nights can be steamy hot and shoes may be left off when walking about at night. The death adder is one of the few snakes that does not flee when you come near. You may unknowingly stand right next to one, and chances are it will not strike.

The death adder likes to snuggle down into the leaves and sand and wait for its victims (frogs, birds, lizards, mice and rats). To lure its prey closer it wriggles its wormlike tail tip. The death adder has fangs that average over 6mm in length and they produce large quantities of venom (average 85mg).

If you touch one it will bite, and its strike is low to the ground. In the days before antivenom half of its human victims died. This snake is rarely seen in Nelson Bay. Less than a metre long, it is light grey to reddish brown with bands of a darker colour. The death adder has a flat, fat look with a sharply tapering tail.

During the summer months 15-20 live young, each about 15cm long, are born.



January 17th-24th

BLACK CORMORANT, *Phalacrocorax carbo*. The Aboriginal name is Gungulba. The largest member of the family and a bird that eats a significant amount of commercially valuable fish. Cormorants can be

seen swimming and diving in the Bay, or drying out on a branch. Being a diving bird it has a low level of waterproofing in its feathers to reduce its buoyancy and allow it to stay submerged a long time with little effort.

After catching a fish it brings it to the surface to flip around before swallowing the fish, head first.

At breeding time the cormorant builds a small nest of sticks in a tree, over water and

lays 2-5 bluish-white eggs.

THE LITTLE BLACK CORMORANT, *Phalacrocorax sulcirostris* is another diving bird which lives locally. Large numbers can be seen roosting in trees at Glovers Swamp behind Harbourside Haven. From here they travel across to Jimmy's Beach and the Myall River for fishing.

Another common cormorant, the pied cormorant, is black and white.



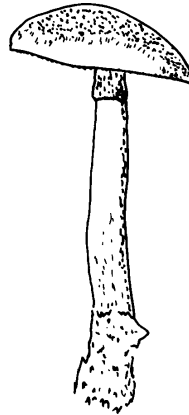
January 25th-31st.

- * Mongolian dotterel arrives from its Siberian breeding grounds. Look for small birds moving rapidly on short legs over sand.
- * Young foxes leave their mother's den to find their own territory.
- * Breeding time for many species of lizard.
- * January and February are the months of highest temperature (27° average), and highest humidity (70%)
- * Wanderer butterflies and ladybird beetles about.
- * Young channel billed cuckoos squawk in the trees, to be fed by currawongs.

DEATH CAP, *Amanita phalloides*

This deadly fungi has little taste, though an unpleasant smell and the toxic effect may take 2 days to develop.

If eaten, immediate hospital treatment is essential.



The large slimy caps are up to 15cm across, convex and grey-green. Young plants have white, warty scales which soon disappear. The gills are white, close together and free from the stem.

One of nature's little horrors, this fungi is safe to look at. They grow in summer and autumn on the ground under introduced trees.

THE NIGHT SKY

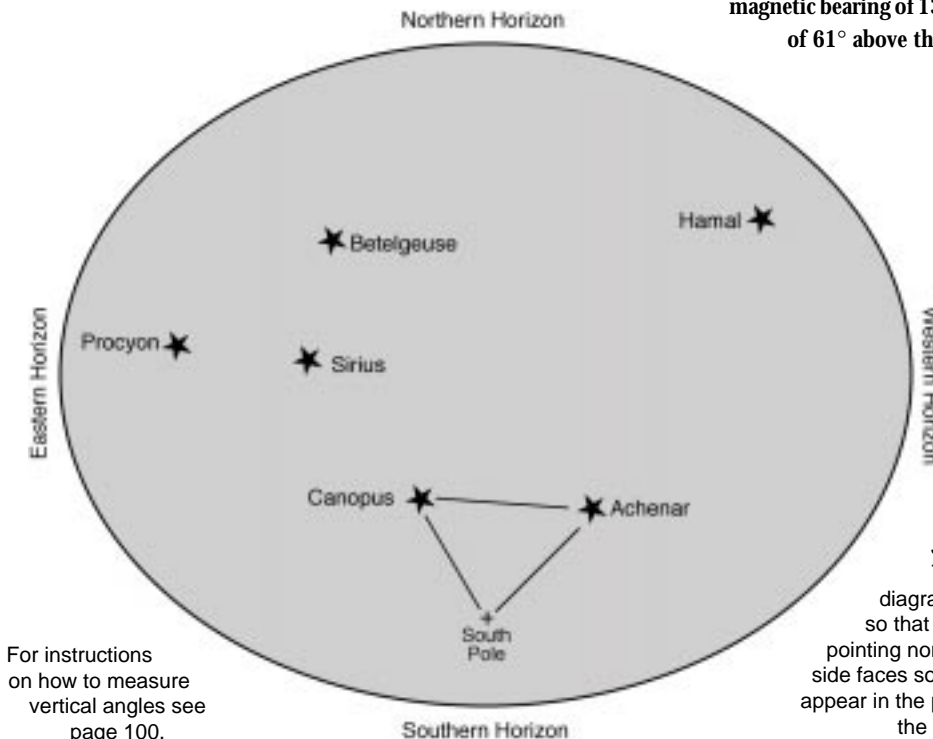
The diagram below shows some of the major stars visible at 9pm on the 25th January. At this time the Southern Cross, and the pointers, are close to the horizon and probably obscured by trees or the dense atmosphere. The stars Achernar and Canopus form an equilateral triangle with the south celestial pole. These two stars are

high in the night sky and are best seen at this time of year.

Achernar (a-ker-nar) is Arabic and means "end of the river", being at the edge of the constellation *Eridanus*, the river. It is one of the brightest stars of the southern hemisphere. It can be found on a magnetic bearing of 204° and an elevation of 52°.

Canopus (ka-no-pus) was named after Canopus, chief pilot in Menelaus' fleet, which destroyed Troy in 1184BC. It is the second brightest star in the sky (after Sirius).

Canopus (a yellowish star) can be found on a magnetic bearing of 130° and an elevation of 61° above the horizon.



For instructions on how to measure vertical angles see page 100.

The Night Sky

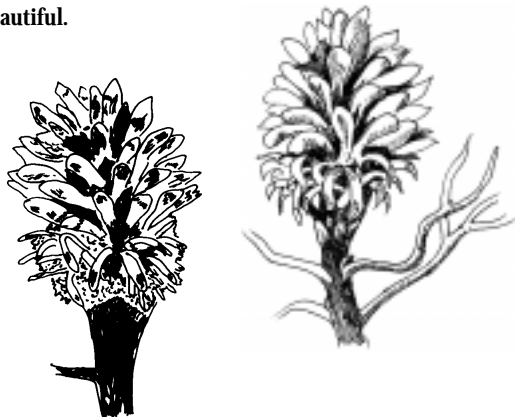
For the evening of January 25th, 9pm.

To use, hold this diagram above your head so that the northern side is pointing north and the southern side faces south. The stars will appear in the positions shown on the diagram.

CONESTICKS, *Petrophile pulchella*.

The word “petrophile” means rock-loving, but in the Nelson Bay district no such preference is shown. They grow anywhere. The flower and leaves are very similar to its cousin, drumsticks.

The plant grows to three metres high. The leaves are forked and forked again. The small tubular yellow/white flowers grow in profusion from an egg shaped “cone” about 5cm long, from the top of the stem. The second name *pulchella* comes from the Latin *pulcher* meaning beautiful.

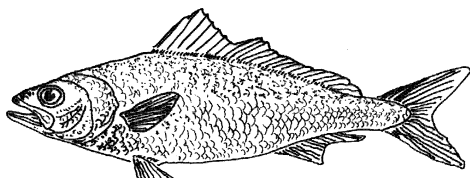


AUSTRALIAN SALMON, *Arripis trutta*.

In January great schools of salmon gather along the southern coast to migrate to Western Australia, and the eastern states. This run coincides with the massing of blue pilchards in the Great Australian Bight during autumn.

Salmon spawn at sea and then move along the coast, enter the bays and estuaries to feed on small baitfish like hardyheads, pilchards and whitebait. Heavy netting for canning has reduced their numbers in NSW. Salmon are steel-blue above the lateral line, silver below and have a forked tail.

Salmon are still abundant in South Australia and Victoria, but it seems that we sometimes put too many in cans to be able to watch the salmon run that once saw these fish, starting in February, swim up the east coast as far as Coffs Harbour.



January 25th-31st.

AUSTRALIAN PELICAN, *Pelecanus conspicillatus*. The Aboriginal name is Doongera.

Soaring overhead, waterskiing to a stop on the water and formation fishing, it's hard to ignore the pelican. You only have to start to clean a fish and one of these big birds will appear for the leftovers.

Pelicans live everywhere in Australia, wherever there is fresh or salt water. They breed any time of the year.

Look to see if our local pelicans are breeding. When pelicans are courting the front two thirds of the pouch (bill) turns scarlet and the remaining third pink, with a dark line on each side. If you have a canoe you can get into the remote swamps and estuaries where they nest. Curiously, after the chicks have been fed they display

violent convulsions biting everything in sight, and a minute later they collapse. Chicks are fed for 100 days. The nearest known breeding colony is on Wallis Lake near Forster.



Pelicans like to get their meal the easy way. They

frequent fish-cleaning tables and professional fisherman's nets. Their diet consists mostly of fish and occasionally some crustaceans, insects, tadpoles and ducklings.

Pelicans are very large, up to 1.9m and with a wingspan of up to 2.6m. The distinctive beak is half as long as its body and is capable of holding 6 litres of water.



February 1st-7th.

- * Ring tail possums have babies in the pouch.
- * Planets visible on the eastern and western horizons at night.
- * *Angophora costata*, (smooth barked apple) "gumnuts", litter the ground.
- * Sunshine wattle in bloom.
- * Snakes on Broughton Island prey upon the newly hatched mutton bird chicks.
- * Hover flies about.
- * Huntsman spiders lay their eggs.
- * Harvester ants collect Golden Wattle seeds.

COAST ROSEMARY, *Westringia fruticosa*.

Walk towards the water on any part of our coastline and the last plant you pass will be this one. Coast rosemary is extremely salt-tolerant, even to the extent of being clobbered by waves occasionally. We have many stunted, wind-pruned and twisted specimens growing from cracks in the rock, seemingly quite happy in their austerity.

Coast rosemary flowers most of the year. The flower is white with orange dots, having a long narrow throat, suggesting that they may be pollinated by moths. The grey-green leaves are recurved and in whorls of 4.



PEEWEE,

Grallina cyanoleuca. Looking a lot like miniature magpies these black and white birds stick to their territory. They like to be near permanent water and their nest is made of mud and plant fibres. In asserting their territory the male and female perch side by side and alternately cry *pee-wee, pee-wee*.

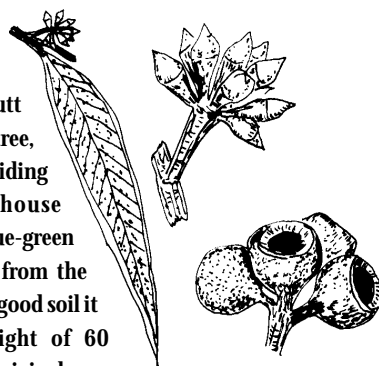


Found all over Australia this insect-eater is also known as the magpie lark.

They spend a lot of time on the ground where they walk with their head jerking back and forth in time with the legs. Watch out for them on the side of the road into Newcastle.

BLACKBUTT, *Eucalyptus pilularis*. The term "blackbutt" refers to the rough bark on the lower half of the tree that remains charred after a bushfire. It is distinguished from bloodwood by having rough, stringy bark on its lower half only, the upper branches being a smooth creamy-yellow. (If the rough bark persists to the ends of the branches then you are looking at a bloodwood.)

The blackbutt is a koala food tree, as well as providing timber for house framing. A blue-green dye can be had from the wood chips. On good soil it grows to a height of 60 metres. Most aboriginal canoe tree scars occur in this area on blackbutt trees.

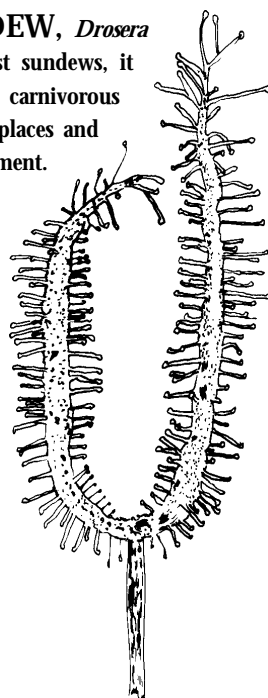


FORKED SUNDEW, *Drosera binata*.

One of the largest sundews, it grows up to 60cm tall. A carnivorous plant, it lives only in wet places and traps insects for extra nourishment.

The sticky blobs on the end of short 'hairs' are both the bait and the trap. The plant is best viewed with the sun behind it.

Looking over this plant you will find various insects stuck, or in a state of decay. These sticky hairs fold around any insect that lands on the plant. In the summer a cluster of small white flowers grow from a stem that emerges from the base of the plant.



MOSQUITO.

The Aboriginal name is Dooping. Hot days and warm nights are a mosquito's paradise. Nelson Bay has plenty of mosquitos. The larvae of one species, *Aedes australis*, lives in saline water in rock pools above the normal high tide level. The *Anopheles* larvae live on the top film of water while other kinds of mosquito larvae hang from the surface film and filter the water around them with their mouth brushes.

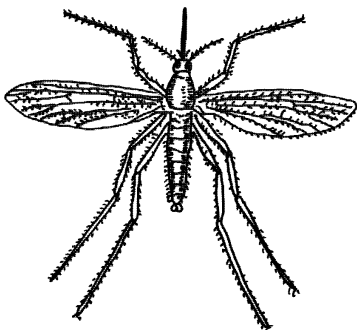
The larvae of *Monsonia* mosquitos extract air from aquatic plants by inserting their breathing syphons into the stem, thus saving them the need to make a risky trip to the surface.

Mosquitos will breed in tree hollows, rock pools, ground pools, water tanks, septic tanks, gutters, drains and freshwater swamps. The larvae feed on any minute particle of organic matter, like algae and bacteria. The female of most mosquitos suck blood and the males feed on nectar. Most feed at night when their host is likely to be asleep, or at least unable to see them. Male mosquitos will gather in swarms and emit sounds, making it easier for the female to find them.

The mosquito that hides behind your picture frame and bites you at night is the *Culex fatigans*. Another domestic species is *Aedes aegypti*, a proven vector for dengue fever. Other mosquitos carry malaria, Murray Valley encephalitis, myxomatosis, yellow fever, Ross River fever and filariasis.

Mosquitos lay eggs on the surface of water. Within a day the eggs hatch into larvae, which have a breathing tube at one end and a moustache-like feeding apparatus at the other. Larvae are preyed upon by fish, dragon flies and water beetles. After a week of wriggling the larva is mature. The lighter-than-water pupa spend three days turning into mosquitos. Floating on the water the pupa case splits and the mosquito emerges, dry. The male lives only a few days as a vegetarian. The "blood-thirsty" female can live for eight months. There are 27 species of mosquito living in this area.

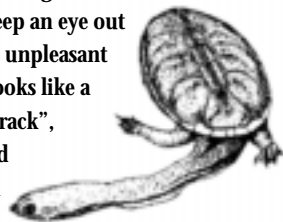
The Black one, *Aedes vigilax*, is the most common (57%). The big Hexham grey is *Aedes alternans*.



February 1st-7th.

LONG-NECKED TORTOISE

Chelodina longicollis. It is not unusual to see this tortoise wandering about in your back yard or along a road in the middle of the day. Driving along Gan Gan Road, or Stockton Street keep an eye out for this amphibian. It is an unpleasant feeling to drive over what looks like a rock, but after a sickening "crack", proves to be a now deceased tortoise. The top of the shell is a dark blackish-brown and the undershell is a creamy yellow. The shell is 25cm long and the neck 20cm.



Always a popular pet with boys, it has glands on its legs that ooze a foul-smelling liquid. Not happy in captivity, it always wants to wander about in search of aquatic plants and animals, as well as new and interesting places to live.

The white-bellied sea-eagle is a keen predator of this harmless scrap of Australia. Empty shells can be sometimes found under the eagle's favourite feeding tree.

The long-necked tortoise lays about 10 eggs in a hole in the bank of its favourite wetland home. The young emerge 2-3 months later and walk to water. It has webbed feet and short claws for climbing banks, and eats insect



BUSHFIRE. Birds can escape from fire and so can wallabies, dingoes and large goannas. Koalas, possums and other climbers scramble higher to meet certain death from burning or asphyxiation. All tree and surface-dwelling reptiles, insects and spiders are wiped out along with stupefied bats, birds, nestlings and eggs.

Wombats and other burrowing animals like lizards, echidnas, snakes, ants and insect larvae are likely to survive the blaze. Fire annihilates the populations of mice, rats and antechinus. It will take between three and seven years for the normal population of animals to re-establish after a fire.

February 8th-14th.

- * Mullet start to run up the N.S.W. coast for the next three months.
- * Bluebottles found washed up on our beaches.
- * Geebung are in flower.
- * Blackbutt in flower.
- * The first strong wind scatters the flowers of the christmas bush.
- * Blueberry ash is fruiting.
- * Jelly blubbers appear on beaches.
- * Young preying mantis emerge.
- * Mangrove seeds wash up on the beach.
- * Ringtail possum road-kills from now until mid-April.

BLACK-TAILED NATIVE HEN

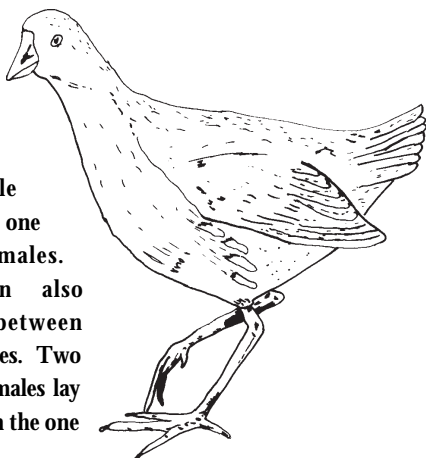
Gallinula ventralis Bright yellow eyes, red legs and a large black tail, this moorhen is very common in the swamps of Salamander and Anna Bay. When disturbed it runs into the water, although it can fly. It eats just about anything that lives in the swamps, particularly soft juicy plant stems and in wet seasons it migrates to new areas, retreating to the coastal wetlands when these areas dry up.



Another similar looking bird is the DUSKY MOORHEN called the Pukeko in New Zealand; which has white patches on the sides of the tail, brown eyes and a red shield on the forehead.

When running away the moorhen flashes its white tail to warn others of danger. Lots of birds help with nest building. Copulation occurs between various members of the clan.

The dominant male often supervises when a junior male mates with one of the females. Copulation also occurs between various males. Two or three females lay their eggs in the one



nest, and incubation is shared between a number of males and females.

This shore-hugging bird is easy prey to feral cats and foxes. Due to regular feeding, a resident population can be viewed easily at Sandpiper Reserve, Salamander.

LADIES' TRESSES, *Spiranthes sinensis*, is the

only species of this genus found in Australia. This ground orchid prefers wet areas and grows to 45 cm high.

There are about four insignificant leaves, each about 8 cm long, growing from the base of the plant. Dozens of small pink and white flowers spiral up the stem.

It is thought that pollination is carried out by a small native bee, or the meadow angus butterfly. Each plant may produce as many as 400 000 seeds each year. It flowers October to March.



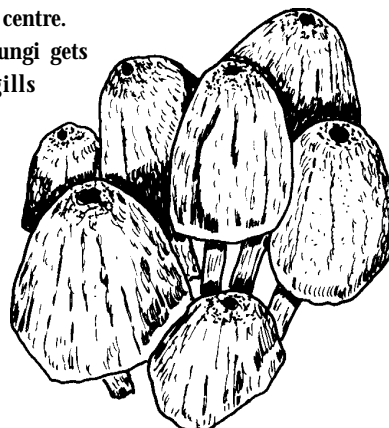
INKY CAP, *Coprinus atramentarius*.

In all but winter months these fungi grow in dense clusters in cool places amongst grass, or on rotted wood.

The plant is considered edible when young, the taste being good. It should not be consumed 12 hours either before or after consuming alcohol. There are, however, many similar-looking fungi that are poisonous.

The cap is egg-shaped, 2-8 cm across, with obvious vertical lines and grooves, pale grey with a darker centre.

As the fungi gets older the gills dissolve into a thick black liquid which drips down. The stem is 10 cm tall, slender, white and hollow.

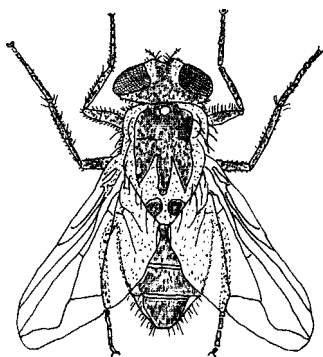


FLIES. The Aboriginal name is *barella*.

Fruit flies live in your tomatoes, peaches and compost.

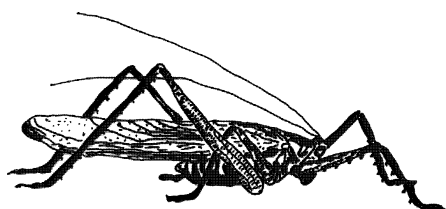
Other flies, "hunting" for protein, are responsible for filling dead creatures with maggots.

Adult flies are only able to ingest liquid foods. To do this they regurgitate or salivate enzymes onto their meal and slurp it up through their sucking mouthparts.



Flies generally mate on the wing. Egg production usually requires a meal of blood or protein. Depending on the species, eggs are laid in the soil, organic matter, water, plant tissue or animal tissue. The larva lives in its food, as a maggot.

This is one insect you will not have to look for, it will find you. The bush fly is preyed upon by spiders, birds and insects, but so outnumbers them that they have little effect on the population.



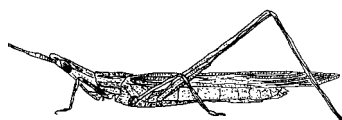
GRASSHOPPERS range in size from 1/2 cm to over 10 cm in length. They have large hind legs for hopping, and wings. They can be easily caught by sweeping a fine "butterfly" net through the grass.

If you are looking after an injured pee wee, grasshoppers by the sackful will keep it happy. They make good bait for trout and bass. You can toss them into spider webs and watch the action. Your pet gecko will appreciate them also.

Grasshoppers feed on plant material. Put one in a glass jar and watch him munch through a blade of grass.

Male grasshoppers produce a sound by rubbing their wings against their hind legs. This is to warn off other males and to attract females. This sounds like "*Katy did; O she did; Katy did; she did*".

February 8th-14th.



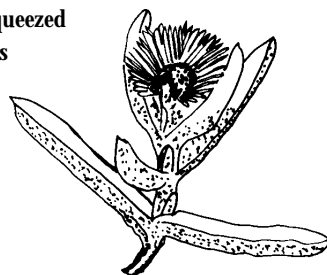
Females have a 'gardening device' at the end of their abdomen used for laying eggs in the soil. A hole is bored in the ground and 30-40 eggs deposited. In an "outbreak area" as many as one thousand million eggs can be laid per hectare. When these hatch they move as a mob and become a locust plague eating everything green in their path.

PIGFACE, *Corpobrotus glaucescens*

This plant chooses to live in one of the toughest environments of all. If it is dry and sandy then there is a good chance that pigface will be somewhere around.

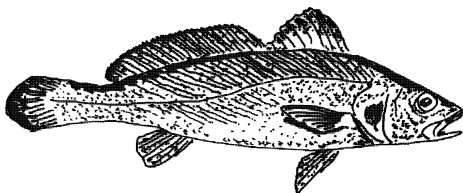
This creeping herb has succulent, triangular "leaves" up to 7cm long. The colour of this "foliage" ranges from green to blue to orange. The bright pink and yellow daisy-like flowers bloom all year round.

After the flower has died off a reddish fruit forms. The pulp and seeds from this fruit can be squeezed out and is surprisingly good eating. The thick triangular leaves can also be eaten although it is better if you steam them in the fire first. The juice of the leaves gives relief to the stings of bluebottles and biting midges (sandflies). This leaf juice is also useful as a lotion for burns and scalds.



February 15th-21st.

- * Leopard slugs mate.
- * Time to plant out natives (grown from the seeds you have collected) to harden for winter.
- * Painted acacia moth caterpillars appear on wattle trees.
- * Feral cats breed.
- * Wallaby births reach their peak.
- * Longicorn beetles emerge from wattles.
- * This is the time of seed production for many species, following the rush of spring.
- * Time to collect gymea lily seeds.
- * Sunshine wattle starts flowering.



JEWFISH, *Johnius antarctica*, is also known as mullo way, jewie and soapy. The Aboriginal name is Gurra wurra. They grow to 60 kg and 2 metres in length.

During September and October jewfish are found in open waters and between the months of March and September they inhabit the beaches. Jewfish feed on squid, octopus, fish, beach worms, pippis and mussels. Most catches of this fish are made between dusk and 3 hours after dark. Fish the holes and channels of the rivers and estuary on the high tide.

During the day jewfish are believed to rest and sleep in caves, under ledges, or in potholes and crevices around the reefs.



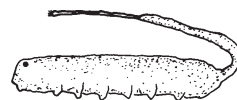
ACT Parks and Conservation Service

DRONE FLY, *Eristalis tenax*. Because of its yellow and black stripes this innocent hover fly is often mistaken for a bee or wasp. In flight it can remain motionless in space, then quickly move



off to 'hover' somewhere else.

They are harmless, although their babies take some liking. The young drone fly is known as the 'rat-tailed maggot'. It lives in rotten organic matter that has decomposed to the stage of producing a putrid liquid. The maggot's long tail is actually its breathing apparatus, allowing it to lie at the bottom of the muck and still breathe air from the surface.



WOOLLY FROGMOUTH, *Philydrum lanuginosum*. This most unusual flower can be seen beside the bicycle path that runs from Shoal Bay to Fingal Bay. This plant, which grows to 1m high, is covered with grey woolly hairs. The crowded leaves are filled with hollow chambers.

The two-petalled yellow flower is 12 mm long and 10 mm wide. The shape of the flower is reminiscent of the gape of a frog. The woolly frogmouth flowers from November to March and lives in the water or around wet places.



SYDNEY ROCK OYSTER, *Crassostrea*

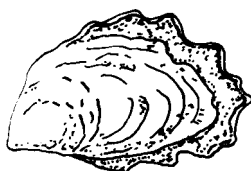
commercialis. The Aboriginal name is Dhirrabwee.

They say that the bravest person to have ever lived was the person who first ate an oyster. The country's hunger for this tasty mollusc is catered for by the farmers of hundreds of oyster leases.

It takes 3 years to grow an oyster to marketable size. Oysters spawn between February and May and they taste best in the pre-spawning period of November to February. Oysters spawn for the first time as a male, but change to female later on.

Oysters are fussy about when they spawn. The water temperature has to be 22°C, the salinity just right and the tide ebbing. One oyster spawning stimulates the others to start and in no time the water turns a milky cloud. Each female oyster produces up to 10 million eggs of which only 0.01% survive.

Port Stephens has reached the level of pollution where all oysters have to be 'purified' by spending some time in clean water so that they can rid themselves of bacteria and sewage contamination. Oysters also concentrate heavy metals and this has resulted in the banning of paints containing tributyl tin, used on the hulls of boats. You are therefore taking some risk eating oysters fresh off the rocks. There are, however, public oyster leases where you may do this. Ask the Fisheries Inspector.



The Sydney rock oysters can spend up to 2 weeks out of the water if kept cool. Oysters will open when they are dead and these should not be eaten. Apart from people, oysters are preyed upon by bream, stingray, octopus, toadfish, starfish and mud worms.

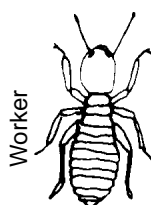
Oyster spat is collected on bundles of sticks where they feed for a time on microscopic plankton brought to them on the tide.

Six months later they have grown to 1 cm in size. The sticks are then moved onto a lease for further growth, thus ensuring that all oysters on these sticks are of the same age. These small oysters prefer to live under the sticks, but at 15 months old the sticks are turned over to the light and their growth increases dramatically.

In the past, Aborigines made fish hooks by grinding down oyster shells. The piles of oyster shells left in Aboriginal shell middens were mined by early settlers as a source of lime for mortar.

TERMITES. The Aboriginal name is

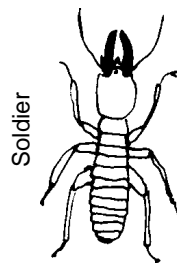
Butteeyuk. Termites are a food source for skinks and echidna. They break down dead wood and help return nutrients to the soil. When termites make a nest in a tree, kookaburras like to peck a hole in it and move in. The termites seal off the intrusion and both species happily coexist.



Worker

Termite nests can also be found in ground mounds, in the soil and in dry wood and branches. Termites can be a pest if they decide to eat the timber frame of your house. Despite decades of poisoning, the termite is everywhere in Nelson Bay. Look for winged reproductives taking to the air on dispersal flights. Not all new colonies will survive and it takes a single pair 3 to 5 years to become potentially destructive.

A queen termite can lay a thousand eggs each day and both king and queen can live for 20 years. Turn over dead wood and look for sawdust trails up trees. Scratch them open and look at the workers. Soon the soldiers will turn up spitting chemical secretions or snapping their large jaws. They are all quite harmless and fragile. Termites live and work in the dark and they control the humidity of their environment by fully enclosing their living space.



Soldier

NATIVE VIOLET, *Viola hederacea*, is a

creeping herb that forms a carpet on the ground in wet, shady areas, particularly under casuarinas. This is our one violet that has a scent, especially on warm humid days.

The kidney-shaped leaves are toothed, hairless and paler below. The flowers are pale violet to white, and blotched with purple. The peak flowering time is in the spring, although some will be in flower most of the year.



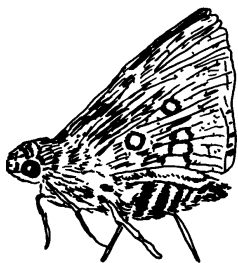
February 22nd-29th.

- * "Spitfires" mass on branches.
- * Gamefish competition puts pressure on sharks and marlin.
- * Broad-leafed paperbark, *Melaleuca quinquenervia* comes into flower.
- * Young birds fly around, in family groups, with their parents.
- * Hairy caterpillar trains appear across paths.

SYMMOMUS SKIPPER

BUTTERFLY, *Trapezites symmomus*, is a fussy eater and the caterpillar larvae will only eat a tufted plant with firm grass-like leaves, *Lomandra longifolia*.

First find the plant, then look for the butterfly. *Lomandra* is widespread and occurs along gullies and

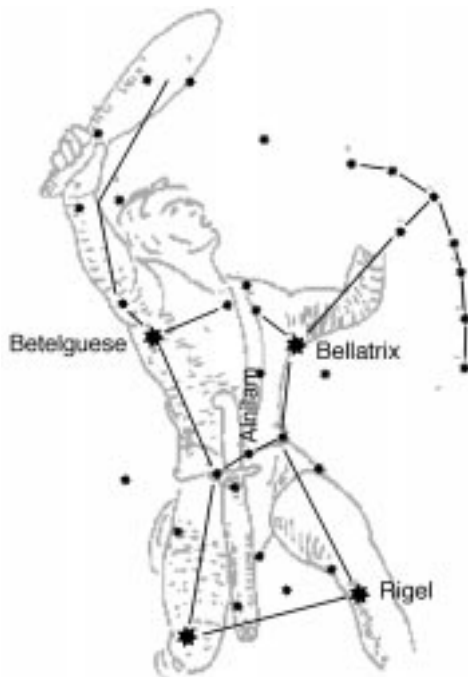


creeks. Known also as the spiny-headed mat-rush, it spreads by underground stems. The straw-coloured flowers are perfumed and form dense clusters on a spiky stem and are edible. The leaves have a notched tip and are frequently broken off. The tender white bases of these leaves are good to nibble and the leaves themselves were used by aborigines for basket making.

The butterfly larvae feed exclusively on mat rush at night. By day the larvae hide from predators in shelters made from silk and dead leaves. The butterfly is best seen between January and March as they tend to disperse after they emerge from their pupae.



ORION



THE NIGHT SKY

The great constellation that dominates the summer nights is Orion.

In and around Orion are some of the brightest and most colourful stars, the brilliant blue-white Rigel, warm-orange Betelgeuse, whitish-green Castor, sun-yellow Pollux and Capella, red-orange Aldebaran and pale-yellow Procyon.

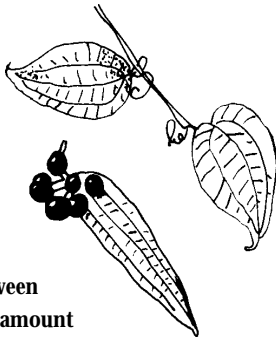
Each star in Orion's belt has a name. Mintaka, the western-most lies on the celestial equator. This means that when it rises above the horizon it lies due east and where it sets is due west. Alnilam the centre star is one of the hottest known, about 45,000° Kelvin. And the third star is Alnitak.

Betelgeuse (bet-el-juz) is Arabic for "the arm pit" of Orion. Betelgeuse is a red giant, brighter than ten thousand of our suns, and shrinks and swells from 700 to 1000 sun diameters. On the night of the 25th of February it can be seen on a magnetic bearing of 335° and an elevation of 49°.

Rigel (ri-jel) is Arabic for “foot”, the left foot of Orion. Rigel is burning itself up at a fast rate. Brighter than 60,000 suns it will soon become unstable and explode - in about ten million years. Look for it on a compass bearing of 310° and an elevation of 60° (while you still can).

NATIVE SARSAPARILLA, *Smilax*

glycyphylla, is a climbing plant with wiry stems and lives on the edges of rain forests, or on the shady side of a hill. Plenty of examples of this plant can be seen on the road to Gan Gan Lookout. The long, heart-shaped leaves have 3 distinct longitudinal veins, and the young leaves are purplish. This plant has grasping, rope-like tendrils to help it stay attached to its host plant.



Take a leaf, nip it between the teeth and taste the tiny amount of juice left there. The flavour is big, sweet and, after a minute, becomes slightly bitter. The leaves of this vine probably make the second best tea available in this area (after swamp May). One or two leaves are plenty. There is no need to crush them. Drop the leaves in boiling water for about a minute. In the early days of Australia this tea was drunk for its anti-scurvy qualities and even exported.

A tiny white flower develops in the summer followed by bunches of black glossy berries in winter.

BLACK MARLIN, *Makaira indica*.

About this time of year Nelson Bay hosts a gamefish interclub competition. The glamour fish for this event is the marlin. A member of the billfish group, the upper jaw is prolonged into a spear. They are spectacular to catch, demonstrating their unyielding speed and endurance in any fight. Their sprinting speed is about 90 km/h.

Females grow bigger than the male, the world record being 707.6 kg. The females produce about 150 million eggs in the summer which are laid in the open sea somewhere beyond the continental shelf. The



February 22nd-29th.

black marlin is highly sought by long-line fishermen from other nations. Sportsfishermen generally tag and release their marlin these days. Some marlin are killed and brought into the gamefish weigh station. Afterwards they are kept and eaten, donated to the Tahlee Bible College, or are towed out to sea and dumped.

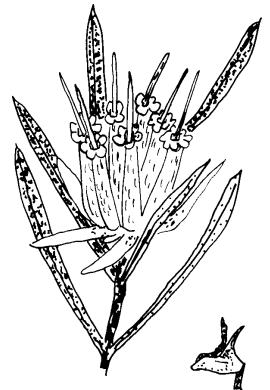


Marlin are generally a tropical fish. The first marlin landed and recorded on the N.S.W. coast was at Port Stephens in 1910.

MOUNTAIN DEVIL, *Lambertia formosa*.

The name of this plant comes from the shape of the woody seed case. When dried and split the seed case has a beak and two horns giving the illusion of a devil.

The plant is widespread and dozens of them will be seen on a walk up Stephens Peak. The leaves are olive-green, long, stiff and have a spike on the tip. You will feel them as they brush against you.



The bright red flowers are in clusters of seven tubes. Each tube has nectar in its base. This nectar can be enjoyed without killing the flower by picking just one of the tubes and sucking the nectar. It has been said that this nectar, if drunk in quantities can produce nausea and headaches. The long flower tubes were designed for bird pollination, although many birds and insects drill through the side of the flower for an easy entry. Flowering occurs generally in the warmest half of the year.



March 1st-8th.

- * Fairy penguins come ashore on Broughton Island to moult for 2-3 weeks.
- * Mullet are in Nelson Bay harbour, and shooting the waves at Fingal Bay.
- * March flies start biting.
- * Blackberries ripen.
- * Earthworms have their first breeding period for the year.
- * Kangaroo apple in berry.
- * Goannas shed flakes of skin.
- * Bandicoot babies are out of the pouch.
- * Some parent birds take a four month holiday before parenting again.
- * Leaf-curling spiders are active.

GHOST FUNGUS, *Pleurotus nidiformis*.

Sometimes after rain this unusually-shaped fungus can be seen at the base of eucalypts and logs.

The caps are large, 20cm across, depressed in the centre and convex at the edges with lobes and splits. The colour is white but there are also suggestions of purple, pink and yellow. The gills are creamy, deep and extend down the stem.

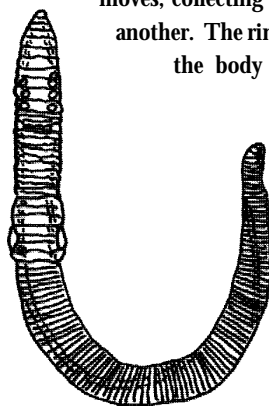
The special thing about this fungus is that it is luminous, producing a surprisingly bright greenish light. This glow persists for several days and nights.

Autumn and winter are the best times to look for them, particularly at the southern base of Gan Gan Hill and in the "jungle" on the Corlette Headland Walk.



EARTHWORMS. March is the first of 2 major breeding periods for the various earthworms found in this area. Two worms find each other and exchange sperm.

Some time later the broad ring around the worm's body moves, collecting eggs at one spot and sperm at another. The ring is then worked off the end of the body and is closed off to form a cocoon. In two to five weeks a



couple of worms will emerge from the cocoon and will, over the next 6 to 9 months, grow to maturity. Each worm will produce several hundred cocoons per year.

Before European settlement in Australia there were several hundred native species of earthworm. Here, along the east coast, their place has been taken by earthworms introduced from Europe in potted plants. The worms we are most likely to find in the garden or compost are *Aporrectodea caliginosa*, *A. Longa*, *A rosea*, *Lumbricus rubellus* or *Eisenia fetida* (tiger worm).

Each day earthworms eat about half their own weight of soil and organic material. Temperatures above 25°C usually prove fatal to worms which is why you rarely see one in the warmer months. Immediately after rain is the best time to find earthworms without digging. Earthworms have blood, muscle, nerves and a brain.

LADY'S SLIPPER,

Hybanthus monopetalus.

A delicate small herb from 10 to 20cm tall that flowers in the summer. The small (10mm) blue-mauve flower has five overlapping petals. Four of them are tiny and inconspicuous while the fifth is much larger and spade-like.

The soft, green leaves are 2mm wide and 50mm long.

They grow everywhere, but can most reliably be seen on Stephens Peak.



OLD MAN BANKSIA, saw-toothed banksia,

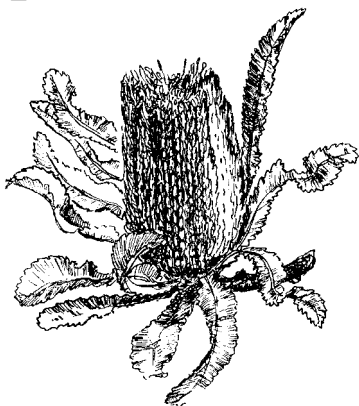
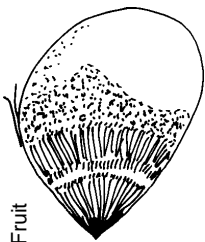
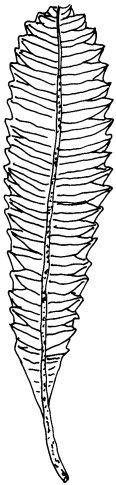
Banksia serrata. As a tree this banksia will grow to 10 metres high. If killed in a bushfire it will regenerate from large underground lignotubers. Most other banksias must regenerate from seeds after a bushfire.

Old man banksia has been in nectar for months now. So prolific is this nectar production that the leaves are left sticky, and puddles of nectar sometimes lie on the ground beneath the flowers, thickening to honey in the sun.

Bees, wasps and birds all help themselves to the nectar and thus pollinate the plant. Some of the mammals that also visit the banksia at night are the brown antechinus, the eastern pigmy possum, and the sugar glider.

The leaves are thick, with regular saw-like teeth, shiny dark green above, paler beneath.

After fertilization large velvety fruit develops, enclosing two seeds each. Black cockatoos love to crunch open the seed cases to eat the seeds inside. Seed cases, both open and unopened persist on the tree for years.



MARCH FLIES *Tabanidae* bite hard, suck

blood and are just big and slow enough for you to swot. This species of fly in Africa transmits disease to man, and disease to stock in Asia. The carnivorous larvae live in damp earth or water, such as in rotting vegetation or on the edge of tidal lakes. The maggots burrow into drier soil to pupate.

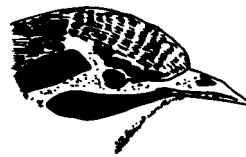
There are 240 species of March Fly in Australia. About 1 centimetre long they have flattened bodies and large pink iridescent eyes.



March 1st-8th.

YELLOW-FACED HONEYEATER,

Lichenostomus chrysops March, April and May are the months that the local yellow-faced honeyeaters are joined by thousands of their cousins migrating from the southern states through NSW to Queensland. This is one of the great migrations that you can still see. The birds do their travelling in daylight. As many as 130 can be seen moving past in 20 minutes. The return migration happens in spring.



This bird prefers a habitat of scrub and heathland. Fuelled by nectar from flowering eucalypts, banksias, grevillias and the grass tree it is an active bird, snatching insects on the

wing and plucking them from vegetation.

Some of these birds nest locally from November to January. The nest is usually in the fork of a branch and consists of a cup of fine grasses and bark. Two or three eggs are laid.

The bird is 10mm long with upper parts olive-brown and under parts grey, and a yellow stripe under the eye. The call is *chick up, chick up*.

The forest south of the highest point in Navala Avenue is a good place to look for them.

PIPI, *Plebidonax deltoides*, are found along high energy coastlines, inside the surf zone. They live on sandy beaches about 8 cm below the surface. The pipi has two shells 30-50mm long joined by a hinge.

They mature at 13 months and live for about 4 years. In 1997, 238 tonnes of pipis were harvested by professional fishermen on Stockton Beach.

If you want to meet the pipi, get yourself to Stockton Beach at low tide. The greatest numbers occur from 1-20km south of Birubi Point, Anna Bay. Wriggle your toes into the sand. They are everywhere. Pipis are preyed upon by fish, oystercatchers, people and four-wheel-drive vehicles.



March 9th-16th.

- * Crickets call from the grass at night.
- * Tiger moths fly about at night.
- * Some aquatic insect larvae change into adult form.
- * In times past, Aborigines cut notches in the bark of acacias to allow the gum to exude.
- * European wasps gather at water.
- * Brushtail possums have the first of two litters of babies.
- * Bloodwoods in full flower.
- * Plovers arrive from New Zealand.

COAST BANKSIA, *Banksia integrifolia*. This common banksia is most easily recognised by its leaves which are a powdery white underneath and dark green above. Young leaves have toothed margins, but adult leaves have smooth edges.

The flowering spike is pale yellow, 120mm high, and appears between summer and winter.

At one time, the timber from this tree was used in biplane construction. It was referred to as "beefwood" because the cut timber looks like a slice of beef with a fatty rind.

The valves of the woody fruits open soon after maturity, allowing the two seeds to flutter to the ground.

In the early days of Australia, part of the flowering cone was used as a wick in a "slush lamp". To make a slush

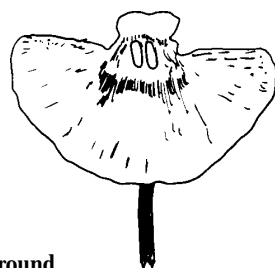


lamp half fill a tobacco tin with clean sand, three quarter fill the tin with hot animal fat. The wick can be made from a coast banksia cone. Remove the cone from the tree, rub off all the dead plant material around the cone, leaving a thin pencil-like stick covered with deep, soft velvet. Push a 3cm length of this wick into the slush lamp. When lit, this lamp provides illumination. The wick draws up the melted fat without being consumed itself.



FAIRIES APRONS, bladderwort *Utricularia dichotoma*. In the bogs around Salamander, in the spring and summer these carnivorous herbs come into flower.

On top of a 10cm tall, slender stem grows a purple flower 15mm across with an exaggerated "skirt". There are two bright yellow nectar spurs at the base of the petal.



The real surprise is around the base of the plant, which grows in shallow water. This plant supplements its diet by catching living aquatic organisms by means of tiny bladders the size of sand grains. These bladders are attached to submerged leaves.

Insects such as midge larvae and crustaceans brush against a trigger mechanism near the mouth, which when touched, causes the bladder to suddenly expand and suck the insect inside. The plant absorbs the result of their decay. After digestion the bladder resets itself.

TIGER MOTH, *Rhodogastria crokeri*.

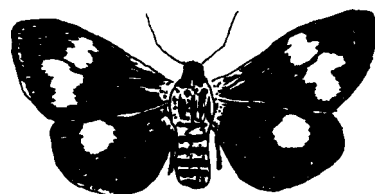
Whilst butterflies are active in daylight, moths are creatures of the night. The Tiger Moth is medium to small with a stout furry body.

Wings are brown and cream and the body is brilliant red. There are many similar moths with similar wing markings and tiger-striped bodies.

The bright colouring is a warning to predators. When molested this moth plays dead and produces a probably bad-tasting froth from the base of the wings.

Moths nest by day on the trunks and leaves of trees. At night they visit flowers to sip the nectar with their long tongues.

The caterpillars are covered in dense tufted hairs.



SYDNEY FUNNEL WEB SPIDER,

Atrax robustus. This ground-dwelling spider is one of the most dangerous in the world. It constructs a burrow in a cool damp place up to

30cm deep in the ground, or uses crevices in rocks and foundations of buildings. A web is constructed

which is tubular rather than funnel shaped, with lines running out to surrounding rocks.

They sometimes live in colonies of over a hundred individuals.

Mature males leave their web and wander about, homeless, looking for a female. They may enter your house after heavy rain. Males are usually killed by

the female at mating, otherwise the male will die anyway after a few months. Funnel-web spiders can live to 8 years.

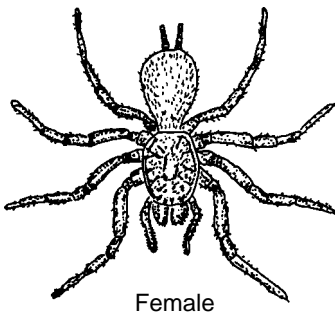
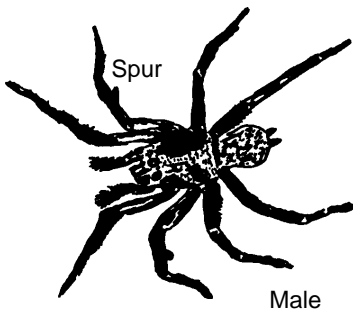
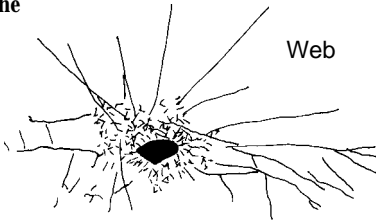
Breeding is from summer to autumn, when the female lays 80-200 eggs in a pillow-shaped egg sac, which she guards. The young emerge from the burrow in late summer or autumn.

Trip-lines are set radiating from the burrow to alert the spider to passing prey. This could be moths, beetles, crickets, millipedes, slaters, snails, ants, cockroaches and other spiders. Small lizards and frogs are also eaten.

This spider is large (30mm female and 25mm male) and easily identified. Both sexes have a pair of very long spinnerets at the end of the abdomen (terminal segment

longest). The colour of the spider is black to red-brown.

The cephalothorax (the first segment of the body containing the eyes and "shoulder") is shiny. The male has



March 9th-16th.

a spur half way along its second leg on each side.

A bite from this spider could prove fatal. Children have died in less than 2 hours after a bite. The venom of the male spider is 5 times more toxic than the female. The venom attacks the nerves of the body causing a shower of electrical impulses to be fired down them. This causes perspiration, tears, saliva and twitching. When a funnel web spider is about to bite it raises the front half of its body off the ground, with its two front legs high off the ground. Fangs glistening with poison, it lunges forward and downward to strike its victim. First aid is similar to snake bite. An antivenom is available. Wear gloves when gardening and do not go barefoot at night.

BLUE SWIMMER CRAB, *Portunus pelagicus*. Aboriginal name *Teerah*. White below and blue above, this crab is found all around Australia. Its rear legs have two paddles which it uses for swimming. Fishermen use a trap called a "witches hat" to catch them. Tilligerry Creek, Bundabah Creek, and the entrance of the Myall River are good places to trap them.

They can be caught in the shallows just off any of Nelson Bay's estuarine beaches. Females, "jennys", in roe should be returned to the water, and there is a size limit and a bag limit.

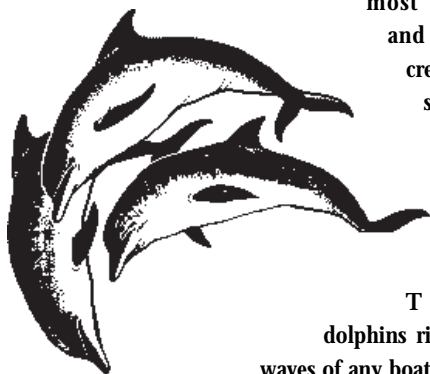
The male has longer nippers and is a deeper shade of blue. The underside flap of the male is tapered and narrow whilst the flap on the female is more square. They are good eating and should be cooked soon, as they do not last long after capture.



March 17th-24th.

- * Very few wildflowers are in bloom at this time of year.
- * Broad-leaved paperbark, *Melaleuca quinquinervia*, in flower.
- * Conesticks in flower.
- * Gynea lily flower heads start to form a flower.
- * Fruit bats mate.
- * Autumn Equinox 21st March, day = night.
- * Welcome swallows depart.
- * Young sugar gliders are ejected from the family nest.
- * Octopus lay eggs.
- * Dotterels arrive from New Zealand.
- * Purple fan flower abundant in the bush.
- * Old gynea lily flowers shed their seeds.

BOTTLENOSE DOLPHIN, *Tursiops truncatus*, Aboriginal name Cooprar. Probably the



most intelligent and best-loved creature in the sea. Port Stephens has several resident dolphin families.

These dolphins ride the bow waves of any boat that travels between 5 and 15 knots. They are happy to play and show off, and most people feel safer when dolphins are in the water. Dolphins go up the Karuah River, Tilligerry Creek, Bundabah Creek and the Myall River. Occasionally dolphins are sighted in the southern-most of the Myall Lakes, Bombah Broadwater.

The bottlenose dolphin grow to 4.5m in length and 275 kg. Males are longer than females. There are between 18 and 26 teeth on each side of both the upper and lower jaw. It is just as well that they are friendly to people and even sometimes seek out their company, or at least tolerate it.

Bottlenose dolphins fish and feed cooperatively. Some members of the group will keep fish in position while

others feed. Aborigines in Moreton Bay in the 1840s were observed to cooperate with dolphins in catching the migrating mullet.



Dolphins have sensitive skins and most adults will have many scars from fights, accidents and encounters with boats and sharks. These scars help you to identify particular individuals. Dolphins are warm-blooded, air breathing animals. They breathe through a blow hole, which is naturally closed and must be opened by muscular action. The bottlenose can dive to depths of 300m and hold their breath for about seven minutes.

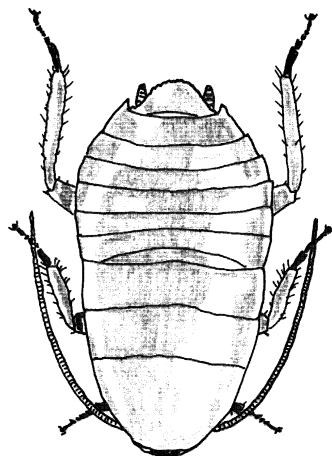
COCKROACH. You are quite justified in feeling disgust at the sight of the few introduced species of cockroach that choose to live in our dwellings. They are a health menace by carrying viruses and bacteria that cause polio, typhoid fever, hepatitis, plague and salmonella.

Out in the yard and in the bush our native cockroaches live under bark, logs and stones and deserve their place in the scheme of things. Some eat rotting wood and others eat just about anything.

There are more than 300 species in Australia and some live for several years. Cockroaches take care of their eggs. The female carries around with her a small brown egg cocoon which contains sixteen eggs. After some time this is deposited in a safe place.

The emergent larvae have been described as "entertaining pets". In the first year the young cockroaches moult five times.

Cockroaches have a remarkable capacity for survival. They can fast from food for three months, go without water for one month, can tolerate many times more radiation than man and some can survive freezing for 48 hours. One pair of German cockroaches, and their offspring could multiply to 400,00 in a year.

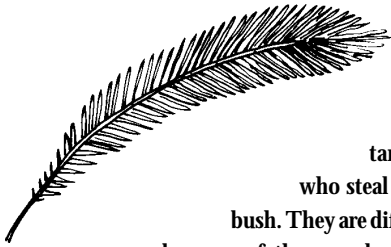


March 17th-24th.

BURRAWANG, *Macrozamia communis*,

Aboriginal name boorrowang.

This cycad is commonly associated with angophoras and bracken fern. If you come across a hole about a metre across in the ground then you are probably looking at the



place where a burrawang once grew. They are a favourite

target for people

who steal plants from the

bush. They are difficult to remove

because of the very large root system.

Specimens of this plant can be over

100 years old. The starch-rich

underground stems were of

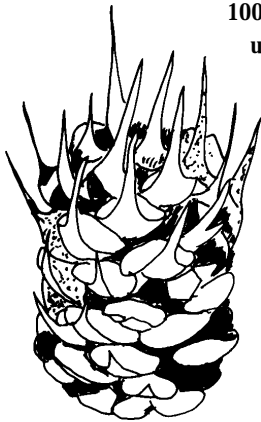
commercial importance 50

years ago as a source of

starch for laundry purposes.

The starchy paste was also

used as an adhesive.



The spiky leaves of this

fernlike plant grow to two

metres long. The soft

brown hairs at the base of

the leaves were once used

for padding in upholstery.

Being a cycad, it

produces large seeds in a cone rather than a fruit. The seed

cone is up to 45cm long and is made up of large numbers

of seeds. Each seed is 4 cm long, 2cm across and turns a

brilliant red when ripe. The whole seed cone has a

pineapple-like appearance. The seeds are poisonous, but

because of the large quantity of starch they contain, the

Aborigines devised a method of getting rid of the toxins.

The seeds were first baked in the ashes for half an hour.

The kernels were then cut into two and soaked in water for

a week or two. March was considered the best month to

collect seeds.

The ripe seed cone appears only on the female

burrawang and then only every two or more years. The

male forms a cone but the seeds are absent.

GRANNY'S BONNET, Slender rice flower,

Pimelea linifolia is one of our most common wildflowers.

Growing to half a metre high, it flowers most of the year.

Its tough rootstock allows it to quickly regrow after a

bushfire. The flowers are white, in dense terminal heads

of 7-4 flowers.

Pollination is probably by night-flying moths.

The bark strips readily from the stem in long tough strips which can be used direct for binding or formed into twine.



WHITE CHEEKED HONEYEATER,

Phylidonyris nigra. The best place to look for these honeyeaters, noisily chattering and squabbling amongst the wildflowers, is on the coastal heathlands.

This bird is happy to perch near its nest and sing between feeding sorties. The male in particular is very vocal from March onwards which is the start of the breeding season.

A male will take flight, starting off with a few chirps, and at the peak of its flight deliver its full throated song, stall and descend.

Look for a white-cheeked bird with a long honeyeater beak and a yellow streak on the wing and tail. Like most of our honeyeaters, they also take insects and seem to need nectar to give them the energy to hunt these insects.



March 25th-31st.

- * Puffball fungi appear on the ground.
- * Orb weaver spiders are active.
- * Male flowering she oak spikes (in pollen) attract swarms of bees.
- * Gould petrel fledgelings leave Cabbage Tree Island.
- * Flame robins come down from the hills.
- * Sea horses lay strings of eggs.
- * Spine tailed swifts depart.
- * Lots of blue-faced honeyeaters call from the trees.
- * Praying mantis ambush insects on nectar-filled banksias.

The Night Sky

The Southern Cross is so much a part of Australia that it is essential you learn how to recognise it. At 8 pm. on March 25th, *Acrux* (A-kruks), the brightest star in the cross as well as being the star at the foot of the cross, can be seen on a compass bearing of 136° and an elevation of 41° .

The star at the top of the cross is called *Gacrux* (ga-kruks).

The southern cross is not always upright as you see it on the Australian Flag. It rotates around the south celestial pole, and, in 24 hours will lie on one side, be upside down and lie on the other side before returning to an upright position.

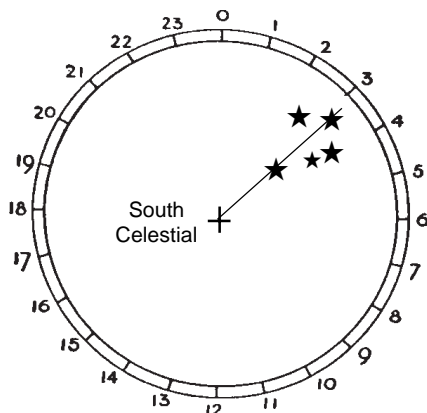
The south celestial pole is a point in the sky around which all our stars rotate. There is no star there, just black night sky. You can point to the centre of this great celestial clock by facing true south and pointing up at an angle equal to your latitude. To face true south set 168° on your compass. Nelson Bay is on a latitude of about 33° . If you raise your arm to 33° above the horizon you will be pointing to the south celestial pole. See now how a line through the southern cross also passes through the south celestial pole.

So regular is this rotation around the pole that the southern cross can be used to tell the time. The method is outlined below, but if the maths seem a little daunting then there is a device on page 98 which does it all for you.

Time from the Southern Cross.

The night of the 29th of March is the best night of the year to use the southern cross to tell the time because there are no corrections to make.

Time From The Southern Cross



Imagine the southern cross to be the hour hand of a 24 hour clock. The south celestial pole is the centre of the clock. Thus 0/24 hours is directly above. Six hours is normally where 3 hours would be on a normal clock, 12 hours is closest to the horizon where 6 hours normally is on a clock. The diagram shows this. On this night of the year (29th), wherever the southern cross points on this clock is the correct time.

You can use this method any time of the year, but there is a correction to make if the date is not March 29th. Firstly, read the time off the southern cross. Next deduct 2 hours from that time for each month since 29th March (April 1st is close enough and is an easier date to remember).

Example: (see diagram above)

Date 31st May

Time on Star Clock, 3 hours

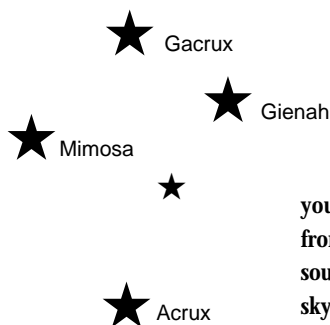
Borrow 24 hours (because we have a big number to take off).

3 hours + 24 hours = 27 hours

March 29th to May 29th = 2 months x 2 hours = 4 hours

May 29th to May 31st = 2 days x 4 minutes = 8 minutes

From 27 hours subtract 4 hours 8 minutes = 22 hours 52 minutes which is 10.52 pm.



At any time of the year you can determine time from the position of the southern cross in the night sky. See page 98 for more information.

The southern cross.

RINGTAIL POSSUM, *Pseudocheirus*

peregrinus. The ringtail possum and the brushtail possum are the two most common possums in Nelson Bay. Here are the rules for telling them apart.



The *brushtail* is about the size of a cat with a pink nose, big ears and a bushy black tail.

The *ringtail possum* is smaller with dark eyes, smaller ears and a long slender tail that looks like the end has been dipped in white paint.



March is breeding time for the ringtail possum and it is this time of the year that you are most likely to hear its soft, high-pitched twittering call. The female usually raises twins, which are carried in the pouch for four months, and then on the back for a further two months. A second litter may be raised in the spring.

At night the ringtail searches out its favourite food - eucalypt flowers and fruit. By day it sleeps in a spherical nest (drey) of bark and grass high in a tree.

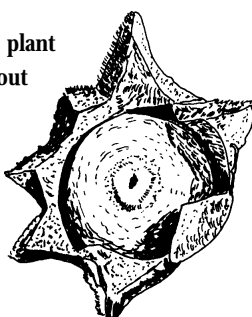


Tracks

Look at the forefoot of the ringtail, it has two fingers on one side of its hand which oppose the other three fingers for grasping.

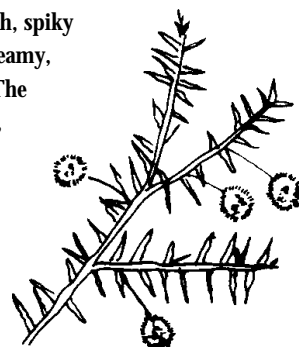
EARTH STAR, *Geastrum triplex*. Autumn is the time of year for you to find this fungi amongst decaying litter on the forest floor.

Growing in groups, each plant starts off as a white sphere about 2.5cm across. The outer layer splits into about 5 to 8 rays which turn dark brown and may eventually fold under the ball. Spores are dark brown and emerge from a hole in the top of the central ball.



March 25th-31st.

PRICKLY MOSES, prickly wattle, juniper wattle, *Acacia ulicifolia* is one of the wattles that blooms outside of spring. From now till late winter this 1.5m high, spiky bush puts on solitary, creamy, spherical, flower heads. The leaves are alternate, stiff, needle-like and 1 cm long. The spiky leaves are flattened vertically and broader at the base.

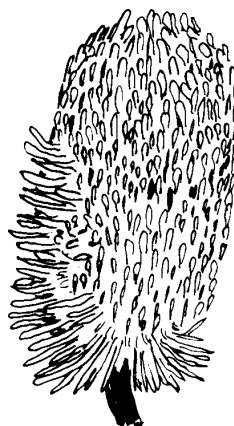


SWAMP BANKSIA, *Banksia oblongifolia*, is a shrub growing to 3 metres tall. The leaves are oblong, 7cm long with irregularly toothed margins. New growth is a rusty velvet colour.

The lemon-yellow cylindrical flower spikes are 10cm tall and 6 cm in diameter. The summer/autumn flowering of this banksia is important to nectar-seeking birds and animals at a time of year when flowering plants are scarce.

The fruiting cones stay on the branches indefinitely. The shrub takes 5-7 years to produce its first flower, having grown from a seed. It does however grow successfully from its lignotuber after a bushfire.

In common with the other banksias, the flowers of this species can be soaked in water to make a syrup for sore throats and colds. Mammals such as the brown antechinus, eastern pygmy possum and sugar glider visit the flowers at night and assist in pollination.



April 1st-8th.

- * Baby noisy miners and rainbow lorikeets are being fed.
- * Fairy penguin chicks leave their burrow for the open sea.
- * Muttonbird parents leave Broughton Island for a 30,000km flight.
- * From now until September koalas are bellowing, fighting and scent-marking.
- * Sugar glider young are ejected from the family nest.
- * Flying foxes mate.
- * New Holland and white-cheeked honeyeaters raise their chicks.
- * For the next month many young ringtail possums will be run over by vehicles.
- * Flying foxes call from the trees at night.
- * Professional fishermen catch lots of travelling mullet.

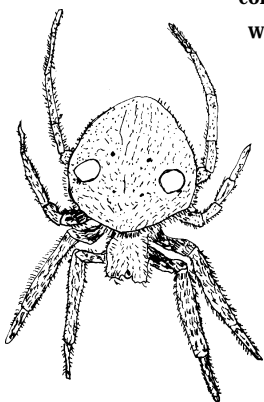
GOLDEN WEB SPIDER, *Nephila* genus.

All through the bush these industrious spiders have constructed their webs across any opening in the vegetation. Not content to hide in a corner these large-bodied hunters cling to the centre of their insect trap. Thus when you walk into a web you are often eyeball to eyeball with the resident and its recent captures. If this happens the spider will immediately drop to the ground, while you wave, spit and curse.

The web is large, tough and golden coloured. The female is large with a grey body and banded black and yellow legs. She constructs the web to capture insects, which are wrapped up and kept at the centre of the web.

In the Autumn the much smaller male spiders appear around the edge of the web hoping to mate. The female usually eats the male afterwards.

Eggs are laid and wrapped in silk, the young emerging in the spring. The golden web spider is active both day and night. Other orb spiders build a web during the night, catch dozens of moths and eat the web before morning. They are all harmless.



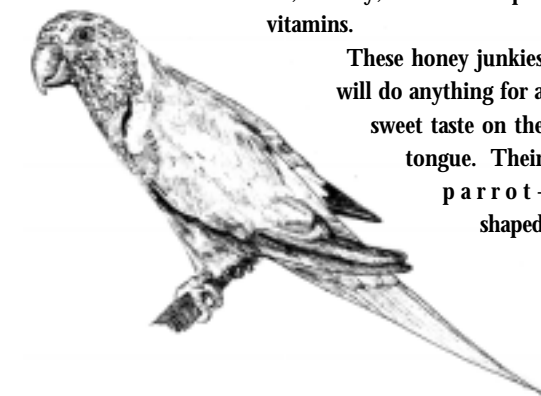
RAINBOW LORIKEET, *Trichoglossus*

haematodus If you hear a sound outside in the trees like a squeaky hinge it may well be a young rainbow lorikeet demanding food from its parents.

The squeaking will stop only when mum regurgitates a warm mush of pollen, nectar and fruit into the young, gaping beak.

If you have a bird bath and a seed tray you will no doubt be very familiar with the rainbow lorikeet. Its colouring can only be described as outrageous, and a little overdone. If any of your trees are flowering these birds will descend en-mass and chatter away as they demolish the pollen and nectar. They have learnt to trust us and you can get within 5 metres before they take fright. The best way to attract them is to grow native flowering trees. They will become very friendly for a mixture of bread, honey, fruit and pet vitamins.

These honey junkies will do anything for a sweet taste on the tongue. Their parrot-shaped



beaks are not suitable for milking long slender flowers. So if their brush tongues don't reach the nectar they will bite a hole and get access that way. Their tongues are covered with stubby nodules for licking out gum tree blossoms.

Where the gums are flowering, there also will be rainbow lorikeets hanging upside down chattering incessantly, helping to pollinate the trees, as well as to continue their own species. They like to nest in a tree hollow near water. Both parents feed the young which leaves the nest after 8 weeks.

SEA MULLET, *Mugil cephalus*

Aboriginal name mipoooyoo.

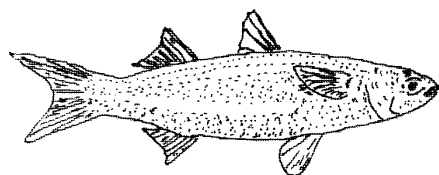
About now professional fishermen are looking out over the water for signs of the schools of mullet that will move into Port Stephens. For this purpose a tower has been constructed on Winda Woppa. Boats and nets are at the ready to surround any schools. Fishermen wait by their boats, talk and smoke. It is an annual ritual that the Aborigines also participated in before the Europeans arrived.

During April and May adult mullet congregate in the estuaries in preparation for migration to spawning areas in the warmer waters of Queensland. Forming huge schools, they swim northward no more than 5km from the coastline. Apparently they round each headland thinking they are

following

t h e
c o a s t .

T h u s
t h e y
e n t e r
e s t u a r i e s ,



and when they realise their mistake they circle clockwise and move back out to sea, keeping Australia on the left, continuing north.

By winter the females, which far outnumber the males, are full of roe. The eggs they lay float south in the currents. In the spring the fish return to the estuaries and swim upstream into the brackish water where they can be seen jumping about, especially in the morning and evening. Mullet caught at sea weigh about 1 kg. Mullet live on algae from bottom mud, as well as plankton and oyster eggs.

Mullet spend the first three years of their lives scattered in schools throughout the estuaries and river systems before they congregate for the spawning run. Look for these mullet in the surf at Fingal Beach or milling about in Nelson Bay harbour.

PINK CORAL HEATH, *Epacris pulchella*.

This very common plant grows to 1.5m high. The leaves are stiff, sharp and heart shaped, 7mm long and radiate horizontally from the woody stem.



The flowers are white tubes each with 5 petals and are clustered around the stem amongst the leaves. Flowering time is summer and autumn.

April 1st-8th.

FIELD MUSHROOM, *Agaricus campestris*.

This is one fungus that you can buy fresh from the old railway tunnels

at Helensburgh, canned from Thailand, or pluck from your own back yard. Positive identification is essential if you are going to eat them.

The large dry cap is up to 11cm across, convex and usually white (with some reddish-brown scales). The bright pink to reddish brown gills are close together and do not reach the stem. The stem grows to 7cm tall, is smooth and does not taper. The flesh is white, thick and soft.



This highly-edible gift of nature is most prolific in autumn, especially after rain. It likes open forest and grass and reproduces by sending out dust-like brownish-purple spores which spread out over a large area.

FLATWORM, *Tricladida*

Turn over a log in a moist area and you could discover the flatworm. Carnivorous, they ensnare their prey (slugs and earthworms) with mucus. Under the log you may also see their eggs which are jellylike. Cut a flatworm in half and you might

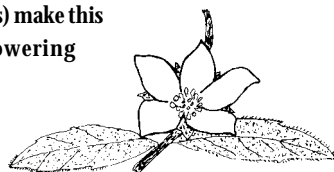
end up with
2 flatworms.



TWINING GUINEA FLOWER, *Hibbertia dentata*.

The large yellow flowers (35mm across) make this spring/summer flowering plant easy to see.

The toothed leaves are large, 50mm long and 25mm wide. A climber, it will drape itself around any nearby plant. It prefers sheltered gullies.

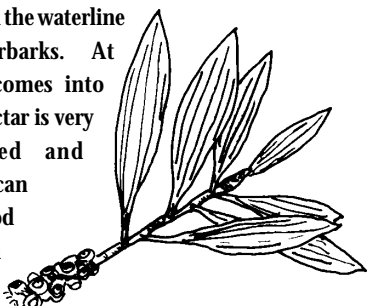


April 9th-16th.

- * April to July bream and luderick travelling north enter Port Stephens.
- * Swamp mahogany comes into flower.
- * Orion sets at night.
- * Geniah and Corvus appear in the night sky.
- * Noisy miners are active.
- * Quolls mate.
- * Gynea lily flowers open.
- * Wild parsnips in flower.
- * Casuarinas in flower.
- * Wattlebirds in great numbers.

BROAD-LEAVED PAPERBARK,

Melaleuca quinquenervia. Most of the white paperbarks you see in the wetlands around Nelson Bay belong to this species. The Myall Lakes system is trimmed around the waterline with these paperbarks. At Easter the tree comes into flower and the nectar is very sweet, perfumed and abundant. You can make a very good cup of tea from parts of this tree.

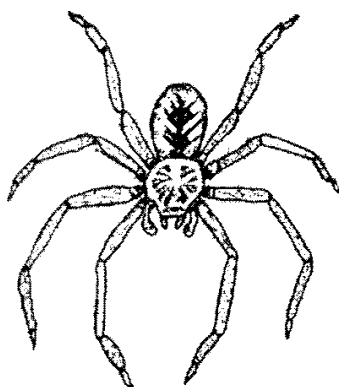


Dunk about 5 of the flowers in a mug of water. There is no need to remove the flower, just wash out the nectar and leave the flower to create more and get on with its job. By now you will have a mug of sweet water, probably with some plant material and hapless insects caught also enjoying the nectar. These can be removed by straining. Bring the water to the boil and add about 8 crushed leaves from the tree. Simmer for 3 minutes and enjoy the fair dinkum taste of Australia. If the taste is not strong enough you can add a little tea.

The leaves are broad and have 5 prominent longitudinal veins. Locally, this is a koala food tree. Oil can be distilled from the leaves, which is useful as an "essential oil" in perfume making. New leaves can be chewed for head colds. Because the trunk and branches often take sharp bends, the wood has been used for boat knees. The creamy flowers are borne in dense bottlebrushes and constitute the biggest massed floral display of the year.

HUNTSMAN SPIDER, *Delena cancerides*.

One of the reasons you may have seen this spider running up the walls or hiding in the folds of your curtains is



because it is an active hunter. Unlike other spiders who wait for their prey to come to them the huntsman moves around, taking up temporary residence in your house or under the bark of trees. Spiders are not social creatures and are programmed to kill any organism of

appropriate size, including a male trying to mate.

The huntsman spider is one of the few exceptions, living in colonies of up to 10 adults and 300 juvenile spiders. An egg sac is laid under bark and surrounded by white silk. The female then guards it until the young are half grown.

Food for the huntsman spider consists of grasshoppers, cockroaches and grubs. The spider jumps on its prey and sinks in its fangs. Sometimes a tug-of-war will start up among fellow spiders for the kill, which will then be shared. As with other spiders the victim is sucked dry of its body fluids. Huntsmen can be identified by their flattened body, spread-eagled posture, and their two parallel rows of four eyes.

FLY AGARIC, *Amanita muscaria*. This fungi

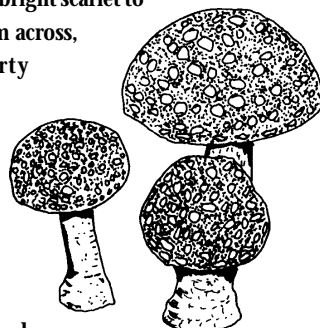
has a very unpleasant taste and is poisonous. The common name refers to an old practice of putting it into milk to kill blowflies. Look for the bright scarlet to

orange cap, up to 20cm across, with white warty fragments.

The surface is sticky. Older specimens fade to pale orange. The gills are white and crowded.

The firm white stem grows to 20 cm. The ring is soft and white and

sometimes hangs down to form a collar. The spores are white. This colourful fungi can be seen from January to April, especially near introduced trees. It is not native to Australia and is often found under pine trees.





PRAWNS, family *Penaeidae*, Aboriginal name Punnoong. In your haste to shell a cooked prawn you may not have noticed that they have 10 pairs of walking legs. This, together with a fanlike tail, eyes on moveable stalks and nippers on the first three pairs of legs makes for an interesting looking crustacean.

The commercial species of prawns, the *Penaeidae*, shed their eggs directly into the sea after fertilization. Other shrimps carry their eggs about with them until they hatch. The commercial varieties in this area are school, king and greasy-back (greentail) prawns.

The king prawn, *Penaeus plebejus*, which grows to 250mm long, begins its life in the Autumn as an egg laid freely on the bottom of the offshore spawning grounds in depths of 100 to 150 metres. In less than a day the egg hatches and the larvae heads for light and the surface. Three weeks later the 12mm long post-larval prawns return to the bottom and move inshore to enter coastal inlets.

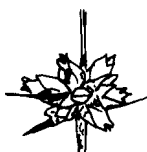
By the time they are one year old the king prawns are about 90mm long but have not yet reproduced. Prawns can be found in the Myall Lakes, in creeks, drains, swamps and throughout Port Stephens. Drag a dip net through the ribbon weed on Bagnalls Beach and you will find some.

Aged 12 months, the prawns get the urge to reproduce and migrate seawards in dense schools, called spawning runs. This usually occurs on the outgoing tide at night. Professional fishermen know about this habit and intercept as many of them as they can in their nets. It is important that some get through and spawn in the offshore waters because most king prawns die after spawning. The prawns that don't die, live on for another year, although many do not return to the estuary or spawn again. They are netted from mid summer to winter on the continental shelf at depths of 60 to 220 metres.

MAT RUSH, *Lomandra longifolia*.

A member of the swordgrass family.

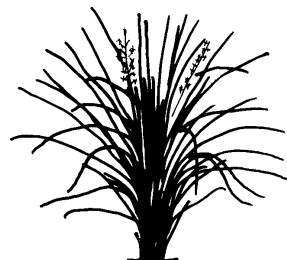
Look for flat, glossy leaves 15mm across and one metre long, growing in dense tussocks straight from the ground. These strap-like leaves are extremely tough and were used by the Aborigines



April 9th-16th.

for making baskets. The leaves were also used as bandages and as a ligature. The white succulent leaf bases are also good to eat.

Numerous, small, fragrant, creamy yellow flowers cluster on a spiky stem in the summer.

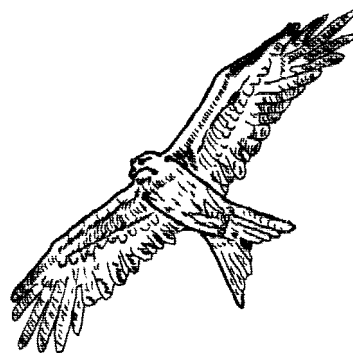


Male and female flowers are formed on different plants. The flowers can be eaten, the taste resembling scented raw peas. A pleasant drink can also be made from the flowers.

KITE. If you see a small bird of prey hovering it is probably a black-shouldered kite or a whistling kite. The black-shouldered kite breeds locally from April to September and is white or grey all over, with a black band on its shoulder. The whistling kite is generally brown and black all over and utters a loud whistling call, followed by rapid ascending short notes. Any time you climb Tomaree you will hear this call. The whistling kite will dine on water birds, rabbits, rats, freshwater crayfish, dead fish and carrion.



Kites will scavenge around rubbish tips or follow outbreaks of locusts or mice plagues. They are also attracted to grass and bush fires where mice and grasshoppers are disturbed. The whistling kite is probably the most common bird of prey on the Tomaree peninsula. They can be seen nesting along the Myall River.

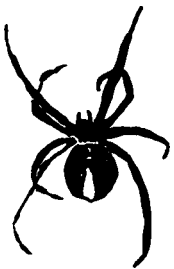


April 17th-24th.

- * Muttonbird parents leave Broughton Island.
- * Butcher birds are active.
- * Channel billed cuckoo leaves for New Guinea.
- * First greenhood orchid flowers appear.
- * Native cherry in fruit.
- * Blueberry ash fruits fall to the ground.
- * Many types of fungus on the ground.
- * Potato orchid leaves appear on the ground.
- * Old bird nests fall to the ground.
- * Blue-faced honeyeaters dine on swamp mahogany blossoms.

RED BACK SPIDER, *Latrodectus mactans*

hasselti, is native, nocturnal, common and venomous. The red back spider likes to live where we do and any quiet, sheltered spot amongst the litter, under houses, in old tins, rocks or around door or window frames will do. Here it will spin its untidy-looking web and wait for its prey of insects, flies, beetles, crickets, ants and other spiders to blunder in.



The web is a snare of very sticky trap threads. These threads contract into a central snare where the creature is trapped and bitten by the spider. When the prey is caught in the web the female wraps it up in silk using the hind legs in a pedalling motion. The red back spider lives out of sight at the back of the web in a retreat.

The female has a satin-black abdomen, about 10mm diameter, with an orange-red stripe. The male, which is harmless, is only a third this size and lacks the red stripe. The legs are long, thin and shiny.

Breeding takes place in summer and autumn. After mating with the male, as many as 300 eggs are laid and wrapped up in balls of web. One of the greatest enemies of these eggs is a small wasp which can penetrate the web and lay its own eggs.

The young hatch in 2 weeks and as they are cannibalistic very few survive to adulthood.

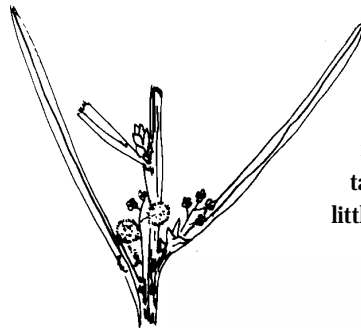
The red back spider is not aggressive and will bite only

when forced to. The venom attacks all the nerves of the body which may lead to paralysis and death. The pain of the bite is intense and gradually spreads to other parts of the body. The bitten limb sweats profusely while the rest of the body stays dry. Serious effects take hours or days to develop. This leaves plenty of time to seek treatment. First aid is different to snake bite as no constrictive bandage should be applied. Put an ice pack over the bitten area and take the patient to the nearest medical help. An antivenom is available.

SWEET WATTLE, scented wattle, *Acacia suaveolens*. This early-flowering wattle has pleasantly perfumed balls of yellow flowers, carried in groups of about eight. Growing to a height of less than two metres the shrub has a blueish-green hue to the stem and grows in the poorest of soils. The leaves are tough, 12cm long, 1cm

wide with a distinct midrib.

An acceptable tea can be made from the leaves, either fresh or dried. The taste is sweet and a little grassy.



seed

ANTLION, Family *Myrmeleontidae*.

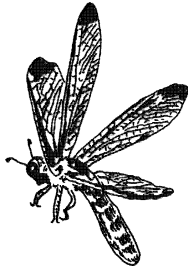
On the ground, under the eaves of your house and in any dry sandy patch of ground, you can see the conical death pits of the antlion. These ground-living flyers have small but useful wings, a broad body, wide head and enormous sickle-shaped jaws armed with spines.



It is the larva of the species which digs the conical pit by burrowing backwards and flicking out the sand. Look for its jaws protruding from the sand. To watch its trap in action catch an ant and toss it in the pit. The ant tries to crawl up the sides of the pit and the antlion flicks sand at it, which causes the sides of the pit to collapse downwards. When the ant is near the bottom of the pit the antlion leaps out and seizes the victim in its powerful jaws and sucks its blood out.



Often it is a lengthy stretch between meals, but the antlion can handle a long fast. Sometimes they travel about underground, like moles, just below the surface leaving a ridge trail to show their passing.

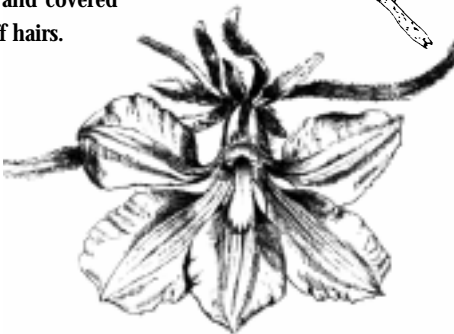


The antlion is the tiny larva of a fragile flying insect called a lacewing. The transformation takes place at the end of December.

PURPLE FAN FLOWER, Snake flower,

Scaevola ramosissima. This sprawling herbaceous scrambler adds a welcome smattering of purple to the bush in the warmer months. Amy E. Mack in 1909 wrote that this plant was always known as snake flower and "to eat the blossom was a certain antidote to snakebite".

The thick leaves are toothed and covered with stiff hairs.



April 17th-24th.

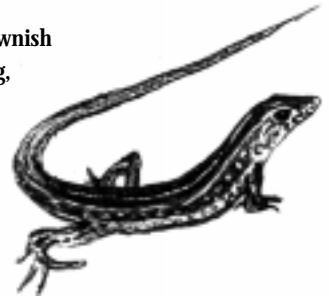
STRIPED SKINK, *Ctenotus robustus*

If you walk along the same bush track often enough you will get to know individual lizards as you pass through their home range. Quite a few of these will be the striped skink.

Look for a brownish lizard up to 25cm long, with longitudinal black stripes. The sides have extensive blotching. Like other lizards it needs to control its body temperature by

moving between warm and cooler areas. They are well camouflaged and move quickly, their smooth shiny bodies flashing from rock to crevice.

Five to seven eggs are laid in the early summer and hatch 2 months later. Gan Gan Hill and the track to Wreck Beach are good places to look for them.

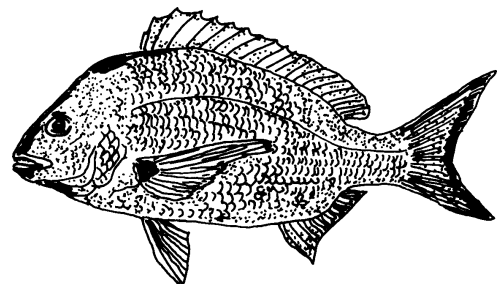


BLACK BREAM, *Acanthopagrus butcher*, Aboriginal name *Coopere*. In Port Stephens the oyster is king. Bream have special teeth and crushing plates in their mouth to deal with oysters. Bream also seek out marine worms, crustaceans, shell fish, green weed and small fish.

Bream are found in the surf, around the rocks, in the estuary and in creeks. They like to hide amongst the rocks, logs and mangrove roots. They grow up to 3.5 kg.

During winter bream move from the open sea into the estuary to breed. The bream season is considered to be from February to October. From March on, many are netted along with blackfish as they come 'inside' to spawn.

Bream can be seen while snorkelling over the weed beds at the back of our estuarine beaches.



April 25th-30th.

- * Muttonbird fledglings leave Broughton Island.
- * Grannys bonnet & mountain devil in flower.
- * Cycad "cones" appear.
- * Squid are in Nelson Bay Harbour.
- * Puff balls are dried out and release spores.
- * First of the winter westerly winds.
- * Prickly pear in fruit.
- * Channel-billed cuckoo leaves for New Guinea.
- * First cold (14°) night.

THE NIGHT SKY

Orion is soon to set in the east, pulling down with it Sirius the dog star.

Sirius (sir-i-us), Greek for "the scorching one", is the brightest star in the night sky. Anything brighter than Sirius will be a planet. Sirius is blue-white and is the nose of the 'Big Dog', *Canis Major*. One reason for its brightness is that it is so close to us, only 8.7 light years away. It is

twice the sun's diameter and three times as hot. Its bearing on the 25th of April is 263°, and elevation 40°.

Procyon (pro-si-on) is Greek for "before the dog" (rising before the dog star, Sirius). Procyon is the nose of the *Canis Minor*, The Little Dog, who rides on the back of Monoceros, the Unicorn. It can be found on a compass bearing of 295° and an elevation of 36°.

Procyon, Sirius and Betelgeuse make a bright equilateral triangle in the sky.

Avior (a-vi-or) is the star at the foot of the "False Cross" a group of stars that mimic the Southern Cross in shape.

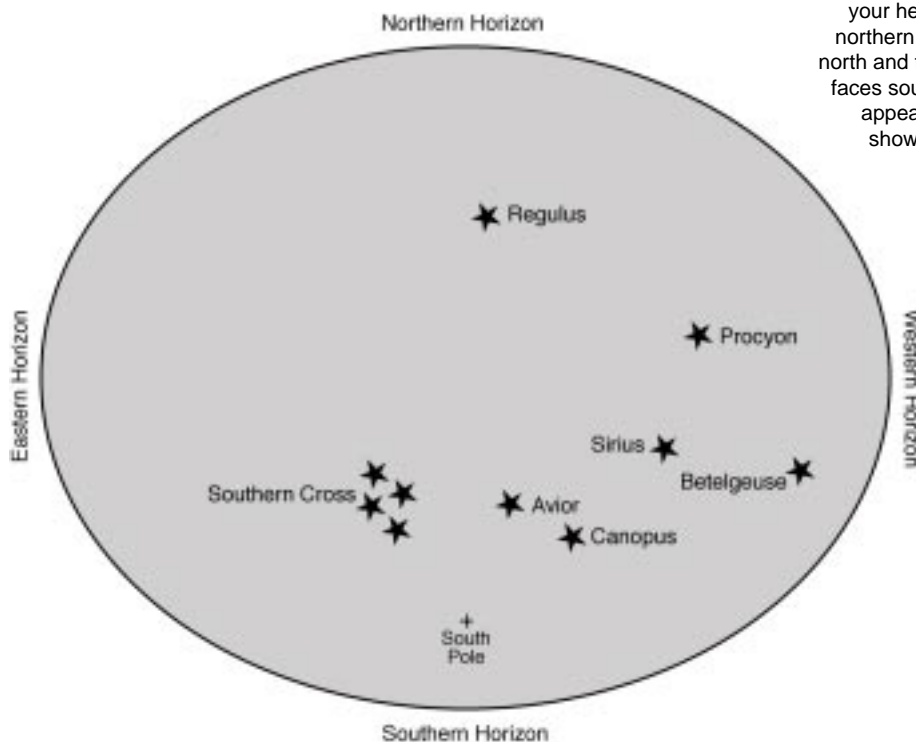
Look for the shape of the False Cross and note that it is larger and dimmer than the Southern Cross.

Avior was named during the Second World War, firstly as Navior (because of its link with both aviation and navigation). A year later the name was shortened to Avior. At that time 57 major stars were used by aircraft navigators to fix their position. Most already had names and it was considered necessary for this last star to have a name rather than just a number. Avior can be seen on a bearing of 195° at an elevation of 57°.

The Night Sky

For the evening of April 25th,
8pm, Eastern Standard Time.

To use, hold this diagram above your head so that the northern side is pointing north and the southern side faces south. The stars will appear in the positions shown on the diagram.

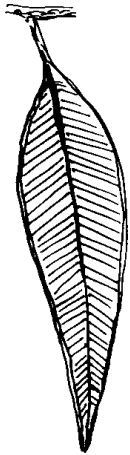


RED BLOODWOOD, *Eucalyptus*

gummifera, is in flower at the moment. Should any bunches of these creamy white flowers be low enough for you to reach you can sample the nectar. Each flower has a tiny cup of sweet nectar which you can scoop out with your little finger. The flowers are followed by an urn-shaped fruit (gum nut) with a distinctive constricted neck.

Red bloodwood is one of our most common trees. Its main distinguishing feature is the rough grey-brown scaly bark which persists up to the smallest branches. *Gummifera* refers to the blood-like red gum that bleeds from cuts on the trunk.

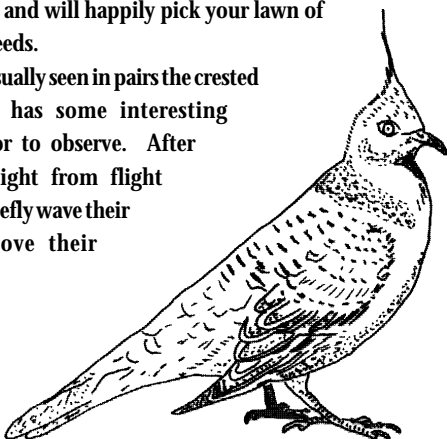
Moreton Bay Aborigines used charcoal made from the tree for treating wounds and for tanning hides. In Sydney the resinous sap (kino) was used by Aborigines to prevent fishing lines from fraying. The kino was used by Aborigines both internally and externally for venereal sores. In colonial times it had a reputation as a quick cure for ringworm.



CRESTED PIGEON, *Ocyphaps Lophotes*

Usually nomadic the crested pigeons seen in Nelson Bay are probably sedentary. They like to eat off the ground and will happily pick your lawn of weed seeds.

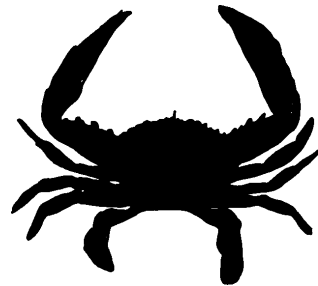
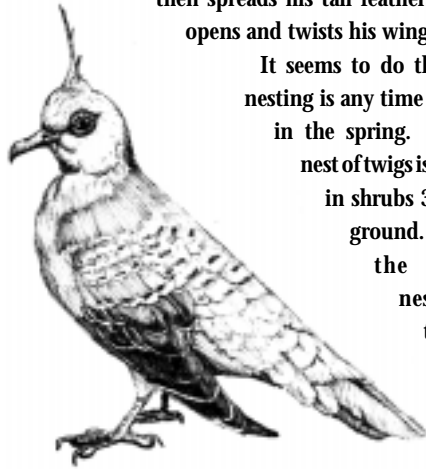
Usually seen in pairs the crested pigeon has some interesting behavior to observe. After they alight from flight they briefly wave their tail above their body.



April 25th-30th.

In the courtship display the male rapidly bows its head and breast to the ground, coo-ing. He then spreads his tail feathers and partly opens and twists his wings forward.

It seems to do the trick and nesting is any time after rain or in the spring. The flimsy nest of twigs is constructed in shrubs 3m from the ground. Cats find the eggs and nestlings easy tucker.



MUD CRAB, *Scylla serrata*, lives in large burrows in mangrove swamps, is highly sought after and makes great eating. A crab trap left in Bundabah Creek or Tilligerry Creek should produce results. All females must be returned to the water. Females can be distinguished by the "flap" on the underside. The female, called a jenny, has a square-shaped flap whereas the flap of the male is tapered. By the time you are allowed to keep them they will be about 3 years old.

These crabs have incredibly powerful claws which they use with accuracy and aggression. They can easily crush a finger. One of their tricks is to throw a claw and retire from the battle, eventually growing another one.



May 1st-8th.

- * Clothes moths in the cupboard.
- * Quolls are born.
- * Peak time for meteor showers.
- * Sour current bush in flower.
- * Many species of birds migrate north to avoid winter.
- * Eels return to the sea to breed.
- * Silveryeyes arrive from Tasmania.
- * Blackthorn comes into flower.
- * Many muttonbird fledgelings are learning to fly, if there are storms many will be washed up on our beaches.

SAINT ANDREW'S CROSS SPIDER

Argiope heyserlingi. Aboriginal name mahl-gun. This harmless spider is another member of the orb web building spiders. A highly distinctive spider, it can be seen at the centre of its web, head down, with legs paired to follow the outline of the characteristic white cross.

The female (much larger than the male) has a body length of 14mm banded white, yellow, brown and reddish. The legs are banded light and dark brown.

The web is intended to catch insects.

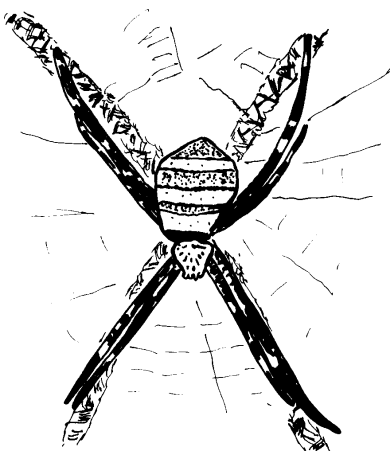
Young females put less work into the hackled cross, sometimes producing a lacy disc instead of a cross. A more solid cross is constructed when the female is more mature.

The male has a body length of 5mm and must be careful to approach the female only when she is ready to mate, otherwise he will be killed or injured.

An egg sac is attached to nearby foliage. Several hundred light

brown eggs
0.8 mm
diameter are
deposited in
a papery egg
sac attached
to nearby
foliage.

Males
make no
web but visit
females on
their web.

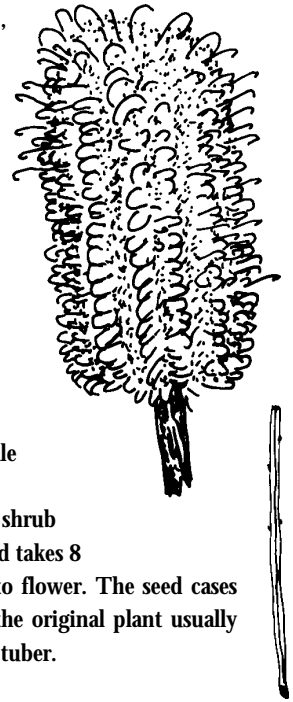


HAIRPIN BANKSIA, *Banksia spinulosa*,

gets its common name from the stiff, black, hooked, styles radiating from the flower. Golden yellow to orange flowers, 15 cm high, appear from March to September.

The Latin name *spinulosa* refers to the (spiny) sharp tooth on the leaf margins. The leaves are very narrow 2-7mm wide, 10cm long, stiff, green above and whitish below. New growth is a pale reddish brown.

This multi-stemmed shrub grows to 4 metres high and takes 8 years to grow from seed to flower. The seed cases open up after a fire and the original plant usually grows back from the lignotuber.



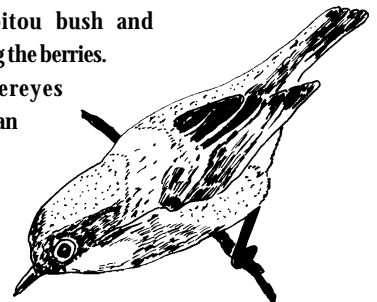
SILVEREYE, *Zosterops lateralis*.

Born in Tasmania this small bird leaves its home island towards the end of summer and arrives in Nelson Bay in early May. Some flocks head towards Adelaide and others as far as Southern Queensland. Presumably the Tasmanian winter is not to their liking, so they avoid it by leaving.

Flying by night they move along the coast snacking on the same food as the resident honeyeaters. They eat insects, nectar, fruit and seeds. In doing so they damage some commercially grown fruit and tend to spread privet, bitou bush and lantana after eating the berries.

Some silveryeyes breed locally and can raise two or three broods in the spring breeding season.

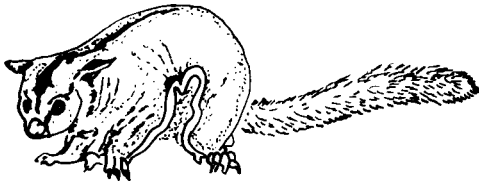
The bird is 120mm long, yellow-green on the upper parts, grey to white underneath and has a distinctive white ring around the eyes. Nests are small, thin cups of grasses and hair, one to four metres above the ground. Usually 3 pale blue eggs are laid. A common species.



SUGAR GLIDER, *Petaurus breviceps*,

Aboriginal name *Pilloo*. Reasonably common in Nelson Bay. You will have to search hard at night with your spotlight in areas where there are tree hollows for shelter. It will be found near its food source, insects, the gum of acacias and the sap of eucalypts. One indication of their presence is scratch marks oozing sap, on trees. You can tell these gliders from other possums by looking for the long fold of skin between the ankle and the wrist. In leaping from tree to tree they can glide for about 50 metres using this built-in kite.

About the start of May the young gliders (9 months old) have to leave their mothers to establish their own group, in an unoccupied area. Sugar gliders are blue grey to brown grey, with a dark stripe from between the eyes to the middle of the back.



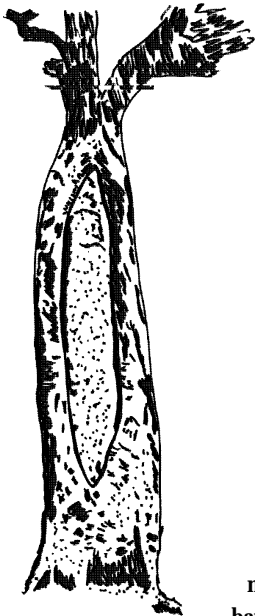
CANOETREE. A living link with the Aborigines

who lived here before the white man arrived, are the canoe trees at Little Beach. There are other canoe trees in the area, but these are visible from the road and are surrounded by high rise buildings.

In the spring, when the sap was flowing a large piece of bark was removed from a tree to be used as a canoe. A canoe of 2 metres would hold 2 people, 2 1/2 metres three people and a 3 1/2 metre canoe would hold 4 people.

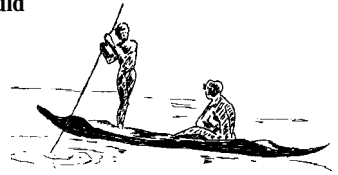
Sometimes you can see steps cut into the tree to gain access to the bark several metres above the ground. The bark was levered away from the tree and carefully lowered to the ground. The ends were bound or plugged with clay. Often, a tree with a curve in it was preferred.

In this case the ends were already turned up clear of the water. At one end a fire was kept alight on a bed of clay.



May 1st-8th.

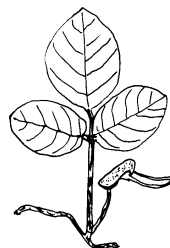
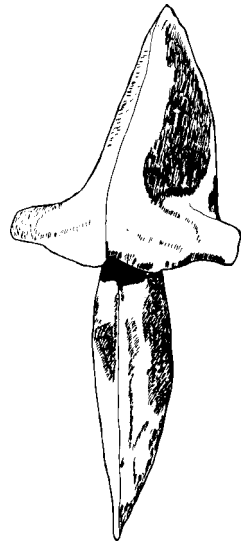
Such a canoe would last three to nine months. This type of canoe making disappeared from Port Stephens in about the 1880s.



DUSKY CORAL PEA, Red Bean, *Kennedia rubicunda*. This twining plant can be seen climbing over vegetation all through the bush on the Tomaree Peninsula. Its distinguishing characteristics are the leaves which are always in clusters of three, having rusty hairs below, and set on a long slender stalk. These leaves are reputed to make a palatable, slightly sweet tea.

The pea flower, 25-40mm long, is bright red with black markings and looks a little like Sturt's desert pea. Flowering is from now until summer. Nectar can be sucked from the flower. The "vine" part of the plant is strong and can be used as a string for securing objects.

After flowering an 8 cm long, hairy flat seed pod develops.



May 9th-16th.

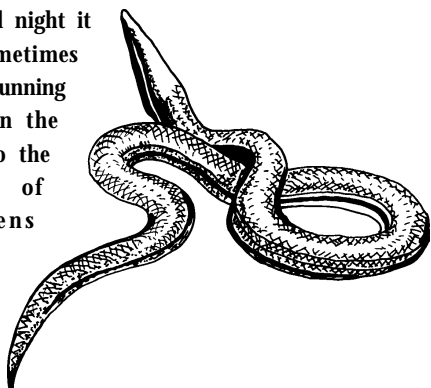
- * Tuna arrive.
- * Mountain devils in flower.
- * Southern cross is high in the evening sky.
- * Orion sets at dark and Scorpio rises in the east.
- * Dingos mate.
- * Look for the smaller male spider at the edge of the web of the golden orb spider.
- * *Pittosporum revolutum* in fruit.
- * Paper wasps abandon their nests, raising young complete.
- * Sydney wattle begins to flower.
- * Male casuarinas in pollen.

BURTONS LEGLESS LIZARD, *Lialis*

burtonis Legless lizards are a group of lizards unique to Australia and differ from snakes by having a small flap of skin either side of where the tail begins.

They also have a broad fleshy tongue instead of a forked tongue. They use it to wipe their eyes. The tail comprises at least two thirds of the legless lizards length, whereas in a snake the proportion is about one fifth. Legless lizards have the same size scales all around their body whereas snakes have bigger scales on their belly. Legless lizards have a clearly defined ear hole, and a bulge above the eye.

The Burtons legless lizard grows to half a metre and is cream to dark brown. The most striking feature is the head, which is wedge shaped and looks something like a sharpened pencil. It lives mainly on small skinks. Its distensible jaws open wide enough to be able to swallow large lizards whole. It has a call that sounds like a drawn out squeal. Active both day and night it can sometimes be seen sunning itself on the track to the top of Stephens Peak.

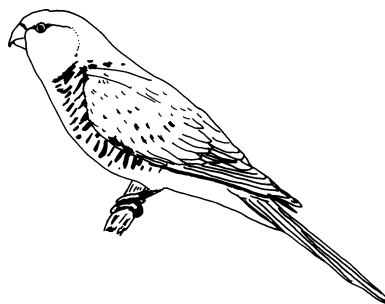


SUNDEW, *Drosera*

spathulata. This insectivorous plant lives wherever the ground is wet and open to sunshine. The thick red leaves form a rosette flat on the ground. Each spoon-shaped leaf is about 2 cm long and covered with fine hairs each tipped with what appears to be a globe of dew, or nectar. This is the bait to lure insects, which are trapped on the sticky hairs. The leaf slowly closes around the victim and breaks down its body, principally for the nitrogen.



In the spring a small white or pink flower forms on the end of a fine stem, slowly uncurling. The swamp behind Harbourside Haven is a good place to view this carnivorous herb. For more details see ear sundew.



SCALY-BREASTED LORIKEET,

"greenies", *Trichoglossus chlorolepidotus*, these birds often fly with Rainbow Lorikeets as each species is after the same food: pollen, nectar, blossoms, berries and fruit.

In flight, they can be recognised by red under the wings. Scaly-breasted refers to the yellow horizontal bands on their chest. Otherwise, they are green all over which makes them hard to spot in a tree. They do, however, give themselves away by their noisy chatter as they raid the flowers.

That is until the noisy miners see them off their territory. They breed in all months except March and April, laying two eggs in a tree hollow.

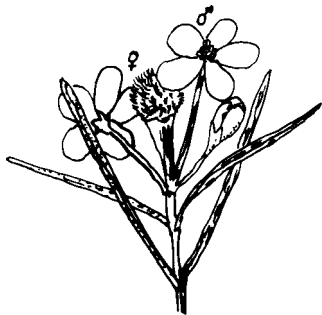
WEDDING BUSH,

Ricinocarpus pinifolius. This is our most common wildflower and is in flower all year.

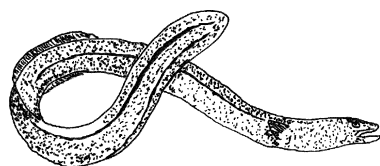
The white flowers have from 4 to 6 petals and are arranged so that about 5 male flowers surround a female flower, 6mm diameter. The fragrance resembles that of leatherwood honey.

The female flower opens first and eventually produces a globular fruit capsule, 12mm across and covered with soft spikes.

The leaves are pin-like, 1mm across and 30mm long, spirally arranged.



May 9th-16th.



After emerging from their eggs the young float to the surface and slowly evolve through different stages, at which time they look like fish.

At about 7 cm long these 'elvers' head for land and move along the coast seeking fresh water to live in. A large number of elvers travelling in a group like this is known as 'the eel fare'. Thus the young travel upstream and across land to colonise every body of permanent fresh water.

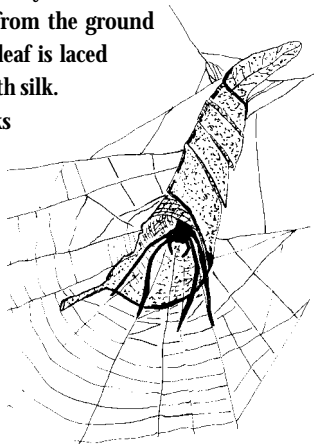
LEAF-CURLING SPIDER, *Phonognatha*

graeffei. Every garden has a colony of these orb-weaving spiders. The web is irregular with a hub at the top. The spider lives inside a curled-up leaf in this hub, legs protruding out onto the rays of the web.

The leaf is lifted from the ground beneath the web. The leaf is laced up around the edges with silk. As the silk dries it shrinks pulling the edges together to form a tube for the spider to live in.

Usually when a male spider approaches a female, the latter attacks, kills or eats the potential mate before, during or after mating. Not so leaf-curling spiders. The male is almost the same size as the female and he takes up residence with her for as long as it takes for her to get interested in him. Look inside the leaf and you might see a second pair of red, hairy legs.

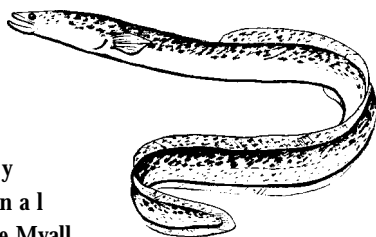
By egg laying time the male has gone and the female curls up a second leaf to serve as an egg chamber. The nursery leaf is usually bent in half and "stitched" together along the edges. It will be hung somewhere within 4 metres of the web. Inside are 150-200 cream coloured eggs each 0.8mm in diameter.



EEL, Aboriginal name Boonong.

As you follow an estuary to its tidal limit upstream and beyond, you enter the kingdom of the *Anguilla* species of eel. On wet nights eels will wriggle across grass to colonise dams and waterholes. Amateur fishermen are mostly underwhelmed at hooking an eel, cutting them off the line before they t a n g l e everything in sight. There is an overseas market for these fish and m a n y professional fishermen in the Myall Lakes make a living catching them.

When eels get the urge to reproduce they begin one of the most fascinating journeys of any creature. Having spent the whole of their life patrolling their section of river or dam, mature eels head en-mass for the sea. For those in isolated waterholes it means waiting for rain, or at least a dewy night to slither across grass down irrigation channels into stormwater pipes to unerringly head for sea. Their numbers can be so great as to block screens on dam spillways. Once in the sea our east Australian eels head for New Caledonia where they spawn in water 500 metres deep. The adults all die after mating.



May 17th-24th.

- * Scaly-breasted lorikeets squabble over swamp mahogany blooms, whilst noisy miners try to defend their territory.
- * Caterpillars feed on *Melaleuca quinquenervia*.
- * A few trigger plants are still in bloom.
- * *Correa reflexa* in flower.
- * Sunshine wattle in bloom.
- * The flowers of *Epacris pulchella* start to dominate the bush.
- * White lerp form on bushes.
- * Fly agaric toadstools grow.
- * Yellow faced honeyeaters pass through, moving north.
- * Tadpoles hatch in freshwater ponds.
- * Leaf skeletoniser caterpillars nibble on gum leaves.
- * Pilchards arrived and suffered a mass die-off in 1995.

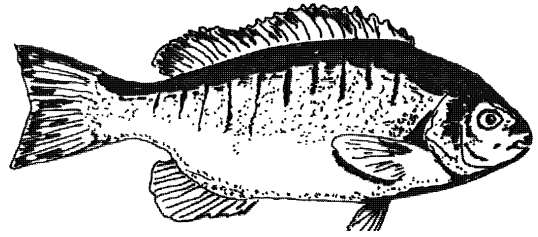
WHITE BREASTED SEA EAGLE,

Haliaeetus leucogaster.

Walking through the bush you will occasionally come to a tree which has fish bones and pieces of fish around its base. This is a sea-eagle's feeding tree. No fish, duck or rabbit is safe with one of these big white-and-black predators around. They will even worry terns and ospreys to drop their catch.

This is nesting time. Look for a huge nest at the top of a tall tree. There is one on Schnapper Island. Sea eagles are very common in Bundabah Creek and the Myall River. Spend some time in a boat and watch one of these big birds pluck a mullet from the water without missing a wing beat. Apart from fish and rabbits, they also take tortoises, sea snakes, waterfowl, nestlings and carrion.

If you see a large black eagle with a long wedge-shaped tail then it is probably a wedge-tailed eagle. They are the largest bird of prey in Australia and breed June to August.



BLACKFISH, *Girella tricuspidata*.

About this time of year blackfish, also called luderick, enter the mouth of estuaries, such as Port Stephens, to spawn. Professional fishermen know this well and set a "6" trap to capture them. This trap consists of nets set in a spiral. Blackfish (and bream) moving along the beach follow the nets to the centre where they mill about passively waiting to be taken to market in the backs of a dozen trucks. These fish are brought ashore at the boat ramp at Shoal Bay and the spectacle of so many fish being endlessly loaded into trucks is one of the amazing sights of Nelson Bay. Some blackfish spawn in the surf and the abundance of so many fish tantalises fishermen who, without nets, can only look on at nature's bounty.

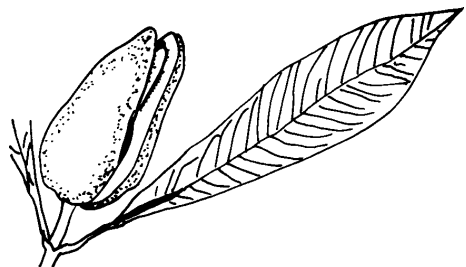
Blackfish are mainly vegetarian, living principally on 'lettuce', which grows on the ocean rocks or green weed further up the river. Fishing for them is an art and the best months seem to be May to September.

Known also as niggers, the head and mouth are small with teeth arranged in rows of 3 or more with a flat edge on the females teeth and three points on each of the male's teeth.

WOODY PEAR, *Xylomelum pyriforme*.

This small tree grows 3-11 metres high. Mature leaves are 10-20cm long on stalks 1-3cm long, dark green with prominent veins. Young leaves are rusty brown with serrated margins.

A creamy white flower forms in late spring and summer, eventually developing into a hard woody fruit. It is this bizarre looking fruit that gives the tree its name. Pear shaped, 5-15cm long, hard as stone and covered in





seed

"suede". This seed case encloses 2 winged seeds.

Trees less than 5 metres high seldom survive a fire. A few days after a bushfire the woody pear splits open releasing the two winged seeds which flutter to the ground, spinning rapidly. The seeds are edible. A pre-european Aboriginal canoe paddle found in this area was found to be made from the timber of the woody pear tree.

BULL ANT, *Mymecia nigriceps*.

Nests of this big, and fierce looking predator, can be seen in the bush throughout Nelson Bay. Their colonies are underground and as you approach, several of them will peer out of the hole, and roving guards will show their concern. It is time for a quick look and leave.

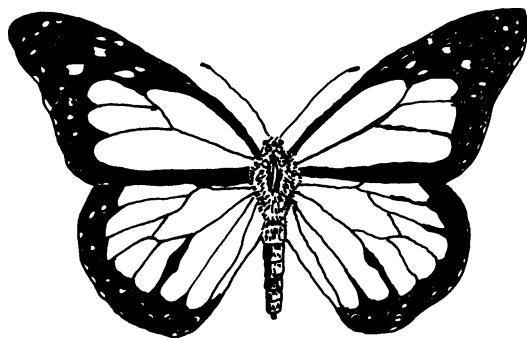
Around the nest there may be the shells of beetles and other meals. Bull ants eat other insects, seeds and fungi. They will comb every square metre of their home territory, looking mainly for something that has died.

Foraging individuals coming across a food source return to the nest leaving a scent trail to lead the workers to the find. They will hold you with their huge pincers. The sting is in the tail and they can sting repeatedly. I have never been bitten and I think it is because I don't expect to be bitten. Others I have been with expect to be bitten and are bitten as soon as the ants are spotted. I think bull ants know this. Anyone lingering closer than 2 metres from the nest will be stung. The bite is painful but does not cause complications. The fastest and most effective cure is to keep with you an antacid tablet such as "quick eze". Chew part of the tablet into a paste and rub this vigorously into the bite.

Underground these insects are busy looking after the queen and cleaning and tending the larvae with touching concern.



May 17th-24th.



WANDERER BUTTERFLY,

Danaus plexippus.

It is likely that for thousands of years groups of this species landed in Australia, but failed to become established. It was not until Europeans arrived here that the wanderer butterfly became permanent. The caterpillars live on milkweeds which are now common wayside weeds. Wanderer butterflies range from north Queensland to Victoria.

They have a wingspan of 100mm and are tawny-orange with black veins and black borders spotted white. Males have a special mark, a thickening of one of the veins on the hind wing.

Pale yellow ribbed eggs are laid singly on the leaves or flowers of milkweed. The emerging caterpillar is showy, banded black, yellow and white and sporting a pair of long black filaments at each end.

Butterflies sip nectar from flowers using their long tongue, which they usually keep coiled up.

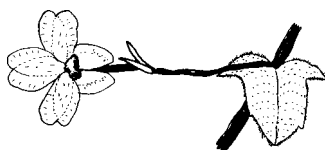
This is the best known butterfly in the world. Males have a small scent pouch on one of the veins of each hind wing. The male uses this to attract the female.

Before turning into a butterfly the pupa is green with golden spots and hangs on some object near its food plants by a pad of silk. The butterflies sometime collect in groups for the night, but don't participate in the great migratory flights that occur in north America.

The wanderer butterfly can be seen at any time of the year.

May 25th-31st.

- * Humpback whales seen heading north from now until August.
- * Brown antechinus babies disperse from their maternal home ranges, many will be seen dead on tracks.
- * Brushtail possums are born.
- * May and June are the months of highest rainfall.
- * Five-corners in flower.
- * Baby quolls are born, the first six to attach to a nipple will survive.
- * Flocks of insect-eating birds fly about.
- * White finger orchid in flower.



IVY GOODENIA, *Goodenia hederacea*. This small perennial herb has a prostrate flowering stem growing from a rosette at the base of the plant. Each of the leaves are 5cm long, toothed, 1-2cm wide and with cottony hairs below.

The flowers are yellow with 5 notched lobes arranged along the trailing stems.

The flower can fertilize itself by firstly compacting the pollen inside the flower. The pollen is squeezed out over the petals where it is kept amongst the hairs. If a passing insect fails to pollinate it, its own style will make contact with the pollen and self fertilize.



THE NIGHT SKY.

Corvus, the Crow, a lopsided square of stars, is the bird that served as messenger to Apollo.

The Southern Cross points to Corvus. A line from the base of the Cross along the major axis through the top of the cross and beyond leads you to Corvus.

The star in the "square" of Corvus that is out of position is called Gienah, which is Arabic for "right wing of the raven".

On the night of the 25th of May at 8.00 p.m. Gienah can be found on a compass bearing of 345° and an elevation of 75°.

Gienah



The
Southern
Cross



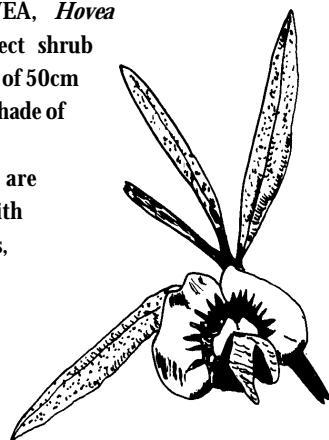
ERECT HOVEA

,COMMON HOVEA, *Hovea*

Linearis An erect shrub growing to a height of 50cm and preferring the shade of other shrubs.

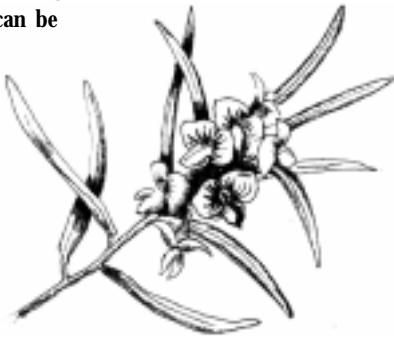
The flowers are purple or mauve with pale yellow-centres, pear shaped, crowded around the stem.

Linearis is Latin for straight with parallel sides, referring to the



leaves which grow to 7cm long, are concave below and have a rough upper surface due to raised veins.

The fruits are globular pods which can be eaten when they are young.

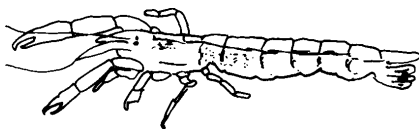


MARINE YABBY, *Callianassa australiensis*.

This pale to pinkish creature is highly sought after by fishermen for bait. It lives in burrows on estuarine sand flats and rarely leaves home. Bagnalls Beach and Corrie Island are good places to visit with your yabby pump. Low tide collecting is easiest, but they can be sucked out of their burrows at half tide and the contents of the yabby pump squirted into a floating sieve.

Yabbies have one large claw that has a powerful bite and can puncture the skin. Burrowing is done with the nippers and first pair of legs, the sand is sifted for food and pushed out the entrance.

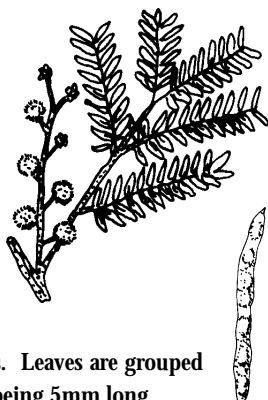
The burrow is only as wide as the yabby. At intervals there are wide chambers where it can somersault over to change direction. Yabby burrows may have 3 entrances and go down to a depth of 1 metre. Yabbies are good bait for bream, whiting and flathead.



SUNSHINE WATTLE, *Acacia terminalis*

Between late summer and winter sunshine wattle comes into flower. Huge masses of bright-yellow, globular fluffy blooms 6mm diameter cover the shrub.

This wattle rarely grows taller than 6 metres. Leaves are grouped into 8-16 pairs, each leaf being 5mm long.



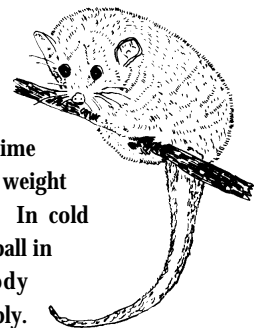
May 25th-31st.



The seeds are a wrinkled pod. Aborigines, and black cockatoos collect witchety grubs from the branches.

EASTERN PYGMY-POSSUM, *Cercartetus nanus*

A rare sight, but thanks to our abundance of flowering banksias, bottlebrushes and gum, you may still live to see one. With a body length of 9 cm and a tail the same length, this is our smallest local possum. When the supply of nectar and pollen is low it will feed on insects and soft fruit. The pygmy-possum spends a lot of time grooming. Having a low body weight is a disadvantage in winter. In cold weather it will curl up into a ball in its nest and allow its body temperature to drop considerably.



During the summer the pygmy-possum's tail is smooth, but as winter approaches fat is stored in the tail and the body to ensure its survival. Breeding takes place spring to autumn, when food is most abundant. Four tiny young will live in the pouch for the first six weeks after birth. A second litter may be raised in the same season.

BLUE -TONGUE LIZARD, *Tiliqua scincoides*.

Blue-tongue lizards can bite but their teeth are short, so they can usually be safely handled. When threatened a blue-tongue will stand its ground, hiss and open its mouth displaying its bright blue tongue.

Blue-tongues breed freely in captivity producing as many as 25 young which are born in a well developed state, capable of looking after themselves. Fully grown at half a metre in length this slow moving lizard pushes its sluggish bulk along on short undersized legs. As well as snails this lizard will also eat plants, flowers, berries, insects, refuse, mice and carrion. There are no venomous lizards in Australia. The blue-tongued lizard is among the largest of the world's skinks.



June 1st-8th.

- * Pixie-cap orchid flowers appear.
- * After the summer bushfires grass-tree flowering spikes are covered in flowers.
- * World Environment Day.
- * Foxes mate.
- * Mosquitos die off, the few survivors forming the breeding stock for next summer's population explosion.
- * Broad-leaf geebung in fruit.
- * Heavy dews keep the ground wet until mid-day.
- * Plovers lay eggs in ground nests.
- * Striated pardalote arrives from Tasmania.
- * Black cormorants move about in large flocks.

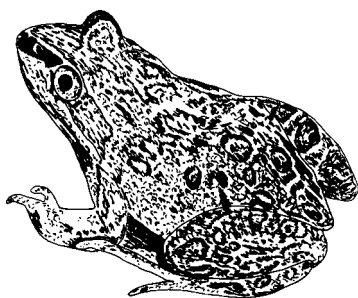
SPOTTED GRASS FROG,

Limnodynastes tasmaniensis.

This is a robust frog covered with army camouflage of green and brown blotches. Like most frogs they like to live in wet areas.

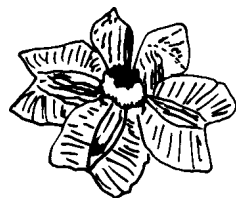
After every rainfall their call, a machine-gun series of clicks, can be heard as they opportunistically seek a mate. The male has nuptial pads on the thumb and adjacent finger with which to hold the female around the pelvis when mating. The female is then able to foam up the water around the eggs as they emerge. The male fertilizes them at the same time. The tadpoles need three months to mature, so if the rain pool dries up in that time it's bad luck.

In appearance and size (45mm) it is similar to the striped marsh frog, which has long brown stripes down its body instead of blotches.

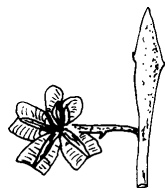


BLUE DAMPERIA, *Dampiera stricta.*

This long-flowering herb shows its sky-blue, flowers from spring through summer and up to the edge of winter. The plant is named after William Dampier, who noticed it in 1699, and took the first specimens of this type of flower back to Europe.



The plant grows to 40cm high and is widespread. The leaves are thick and broadly diamond shaped with teeth at the corners.

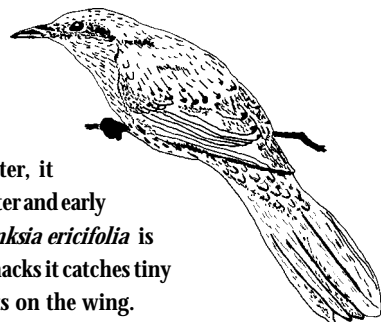


The flowers are a rich mauve to blue with a pale yellow throat, 12mm across and have a creased look.



LITTLE WATTLEBIRD, *Anthochaera*

chrysoptera. Dressed in grey-brown plumage with fine white streaks through it, the little wattlebird actually has no wattles. It is most likely to be seen when you are out enjoying the banksias.



A honeyeater, it nests during winter and early spring when *Banksia ericifolia* is flowering. For snacks it catches tiny midges and gnats on the wing.

Heath banksia (*B. ericifolia*) puts out orange cylindrical flowers about 15cm long. Honeyeaters and bees rely on this winter flower for their survival and this must be taken into consideration when planning a winter burnoff.

CRANBERRY HEATH, *Astroloma*

humifusum, so called because the fruit, which is edible, was used in early Australia as a substitute for cranberries in jams and pies. These greenish fruits contain a sweet viscid pulp surrounding a fairly large stone.

The shrub rarely grows more than 30cm high. The leaves are dull green, 1cm long, finely toothed and end with a sharp needle.

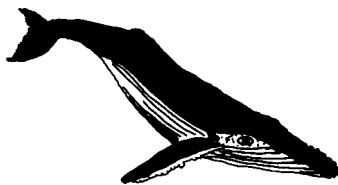
The bright red tubular flowers are cigar-shaped, about 14mm long. Look for them in exposed rocky areas beside the fire-trails between Fingal Bay and One Mile Beach, or on Morna Point.



HUMPBACK WHALE, *Megaptera novaeangliae*.

Fourteen metres long and weighing 48 tonnes these mammals should be easy to find. They can be seen travelling north on their annual 5000km migration about the start of June.

About 3500 of this species will pass Nelson Bay in the next 2 months. At least two hundred of those will pass close enough to the coast to be seen from land.



They spend winter in the warm tropical waters around the Whitsunday Passage, Queensland. Here some females give birth. They can again be seen heading south from September to November, to spend the summer in the soupy-rich waters of Antarctica, feeding on krill and small fish. They gulp large quantities of water and force it out again through a long sieve called baleen plates. There are between 270 and 400 of these plates in the mouth on each side of the upper jaw.

Whilst travelling the males sing a song of groans, cries

June 1st-8th.



and chirps, lasting 6-35 minutes. The song is changed each year.

Sprinting, a humpback whale can travel at 20 km/h although they usually cruise at about 11 km/h, surfacing to breathe every 3-6 minutes. This, and the habit they have of leaping out of the water and rolling, will indicate their presence. They travel in small pods of 2-6 whales.

Some people at Fingal Bay, Fishermans Bay and Anna Bay with ocean views know when they are about. If you were keen you could spend some time on Tomaree or Stephens Peak with binoculars at the peak times of June 1st and November 1st. Sometimes a humpback whale will roll on its side and wave its huge flipper at you. The humpback's blow resembles a thin column of spray about 3m high.

Young humpback whales are 4.3m long at birth, after a 11.5 month gestation. They will be weaned at 7 months and stay with their mother for 2-3 years, which is the usual time between matings. Humpbacks are sexually mature at 4-5 years and live to 30 years. Lactating mothers produce 600 litres of milk every day.



Brydes whales, minke and killer whales are also seen regularly. Also on the same migration path is the southern right whale.

This whale blows a misty V-shaped spout of vapour from two widely separated blowholes. On 5-7-1993 one of these whales entered Port Stephens for a few hours.

June 9th-16th.

- * Some *Melaleuca quinquenervia* are still in flower.
- * *Acacia suaveolens* is in flower.
- * Tailor are being caught locally as they travel north to Fraser Island.
- * The "wolf whistle" of the currawong can be heard.
- * Quoll babies detach from their mothers teats and are left in the den while she forages.
- * Echidnas mate.
- * This is the time of year that fungi are most abundant.
- * Sour current bush is in fruit.
- * White-breasted sea eagles nest.
- * Earth star fungus appears.
- * Red ironbark in flower (Kurrara Hill).
- * Helmet orchids appear.

GREASY CLUBFOOT,

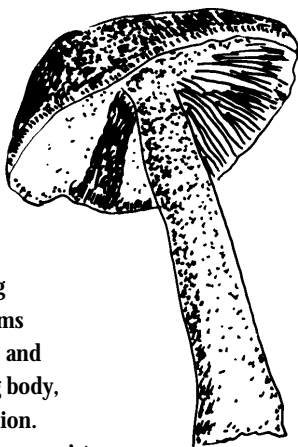
Collybia butyracea.

This fungi is easily identified by its greasy helmet-shaped cap, 3-7cm across. The cap is brown and smooth with a greasy, soapy feel. The gills are creamy white to greyish brown, thin, crowded and join the stem. The stem is dilated at the base and grows to 5cm tapering upwards, tough, and reddish brown.

The toxicity is unknown even though this fungi is common.

It can be found any time after rain but especially between May and August. It grows on forest litter and on rotting logs. Like all mushrooms and toadstools the caps and stems are just the fruiting body, responsible for reproduction.

The fungus body proper consists of very fine threads diffused through the soil and timber. Only when environmental conditions are suitable or the food supply is exhausted, does the fruiting body form which allows us to identify the fungus.



FALSE SARSAPARILLA,

native lilac, *Hardenbergia violacea*.

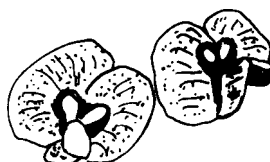
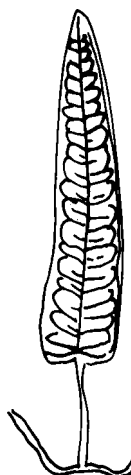
This winter-flowering pea grows everywhere in this area. It climbs other plants to reach the sun and where no support is available it forms a dense mat on the ground.

The narrow leaves grow to 15cm long and have a prominent network of veins.

B o i l
about 4 of
the crushed
leaves for
about a
minute for a

herbal tea which is slightly sweet and reasonably pleasant.

The violet-coloured flowers have a pair of yellow spots on the petals, giving the whole flower the appearance of a tiny face looking up at you from the ground. These flowers, when mordanted with alum give a grey-blue coloured dye to wool.

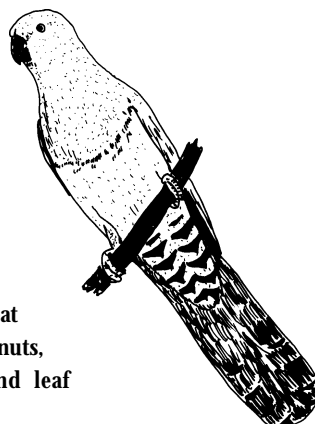


KING PARROT, *Alisterus scapularis*.

Aboriginal name Girgir.

One of these big parrots will eventually end up in your seed tray. The sexes have different colouring. The male has head and underparts scarlet, whilst the female has a dark green head.

These parrots eat seeds, berries, fruit, nuts, nectar, blossoms and leaf buds.

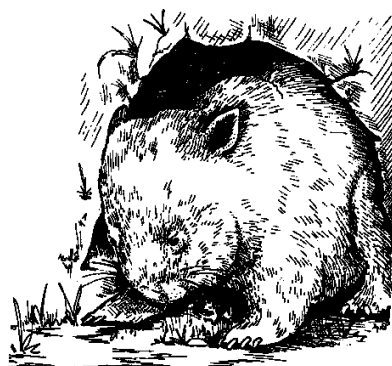


King parrots are most likely to be seen in the winter after flying down from the Dividing Range to snack on the coastal winter goodies that our vegetation supplies.

By spring most return to the mountains to nest in the tree hollows of tall gum trees.

The young take 15 months to achieve adult plumage and during this time they have the same colouring as the adult female.

June 9th-16th.



It takes a

wombat between three and eight hours of grazing on grasses each night to satisfy its hunger. It also nips off sedges, roots and the leaves of trees with sharp chisel like front teeth which grow continuously. The presence of wombats is usually evident from their characteristic "cubed" droppings, and their large burrows. The last sighting of a wombat in this area was at Tomaree Lodge in 1990.

WOMBAT, *Vombatus ursinus*.



Nelson Bay is not classic wombat territory but occasionally one is sighted. Their numbers must be so low that at any time they could disappear from

this area. Normally nocturnal, they come out in the winter during the day if it is warm. Wombats may be seen at this time of the year with a young at foot.

They eat native grasses, sedges, rushes, herbs, leaves,



Front
Footprint

roots and fungi. It normally only takes a few hours for a wombat to excavate a tunnel in the ground four metres long. There may be a dozen burrows in the wombat's range, some of which may be shared by wombat neighbours.

In summer they will only come out of their burrow when the temperature drops below 25 C. Wombats have almost no tail, a backward opening pouch and grow to over 30 kilos. They are the largest burrowing animal in the world. Wombats apparently make good pets and it is probably a matter of preference if you would rather have one of these digging in your back yard or the neighbour's cat.

In the wild wombats live for about 5 years, breeding after about 2 years. Cubs are born singly weighing just one gram, and spend 6 months in the pouch and up to a further year with their mothers after which it is a solitary life.



Rear
Footprint

WILLIE WAGTAIL,

Rhipidura leucophrys.

Even at rest this active bird moves its tail constantly from side to side. In flight, it quickly changes directions taking insects and winking out spiders.

Willie wagtails are black above and white below. Their white eyebrows set them apart. In a territorial dispute, they expand their eyebrows until they have made their point. The submissive bird shrinks its eyebrows until they disappear.

Any time from June on, a small, neat nest is made on a horizontal branch close to the ground.

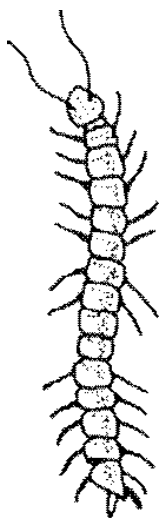
A similar looking bird is the grey fantail, which is grey-brown and has a permanently fanned tail.



June 17th-24th.

- * Nights are getting cold, and snakes begin to hibernate down holes in the ground.
- * Bandicoots are at Middle Rock Caravan Park.
- * Wedge-tail eagle pairs perform pre-mating aerobatics.
- * Winter solstice, 22nd June, longest night.
- * After storms, look on the beaches for dogfish egg-cases and cuttlefish egg-masses.
- * June is the month of highest rainfall, 155mm.
- * Apple berry in flower.

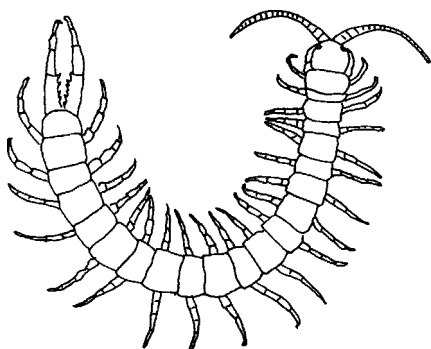
CENTIPEDE. The jaws seen on some centipedes are used for grasping their prey. Centipedes have a set of legs on each body segment.



Centipedes are happiest when they are in a narrow crevice. To help in this, they can flatten their body, and their legs are to the sides. Some centipedes have more than a hundred legs, but most have 40-50.

Centipedes have venom glands and hunt at night for beetles, bugs, centipedes, spiders and even frogs. They even take a bite at people occasionally.

Females lay their eggs under a rock or log and curl up around the batch.



NOISY MINER, *Manorina*

melanocephala. Probably the most common bird in your garden. This honey-eater lives mainly on insects and will regularly "groom" your windows, eaves and plants of spiders and insects. A fiercely territorial bird, they gang up against any invader be it a visiting bird or a predator, such as a snake or goanna.

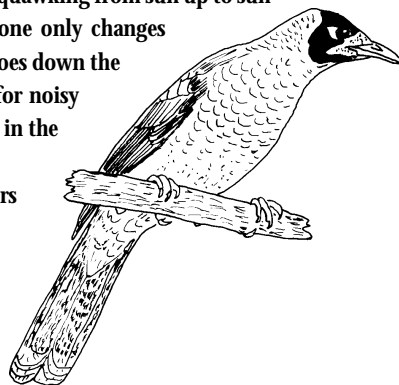
The yellow patch around their eyes is used to glare at the opposition. By fluffing up the yellow feathers, the two patches look like big eyes when seen head on.

Noisy miners belong to a "tribe" and congregate for "corroborees". Birds come together, open their mouths, wag their tongue and wave their wings. They have a communal song and they feed, bathe and even sleep together.

Noisy miners mate indiscriminately with many partners. Each male then apparently thinks the eggs are his and helps with the feeding. Up to two dozen males will help the female raise the chicks.

When the fledgelings leave the nest they move about the branches squawking from sun up to sun down. The tone only changes when a grub goes down the gullet. Look for noisy grey fluff balls in the trees.

Early risers may hear, ten minutes before sunrise, the melodious communal song of the noisy miner.



June 17th-24th.

BRUSH-TAILED PHASCOGALE

Phascogale tapoatafa, is a carnivorous mammal related to the antechinus and the quoll.

Living mainly in trees, the phascogale has a head and body length of 200mm and a tail of about the same length, half of which is covered with long black hairs giving a "bottlebrush" effect.



Days are spent in a tree hollow surrounded by a nest of leaves and bark. Nights are spent roaming about the home range of 4 1/2 ha searching for spiders, centipedes and invertebrates. Phascogales pin their prey with their front paws and death comes from a series of bites.

The fur is grey on top and cream below. Eyes are large and protruding. Ears are long and both the front and rear claws are long and sharp.

Between June and early July the females become receptive. Males become increasingly interested in females and competition is strong. Their chests become stained with yellow secretions of the chest gland.

Copulation lasts for several hours during which time the female may doze off into sleep. All males die soon after the mating season due to stress-related illnesses, (males held in captivity may survive for 3 years). Females live about 2 years. Gestation is about 29 days, with 8 young being born late July to early August.

The female lacks a proper pouch and the young stay attached to the 8 nipples for 7-8 weeks. The young are weaned at 5 months but share the maternal nest until the next breeding season. Breeding females disperse to find their own home range.

The phascogale is the largest mammal in which all the males die at the end of the first breeding season.

It may already be the case that we no longer have this mammal living in the Nelson Bay area.

The best places to look for them is at night in mature forests of rough-barked eucalypts.

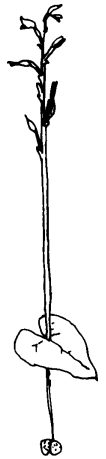
MAYFLY ORCHID, *Acianthus*

caudatus. An uncommon species, you will have to look hard amongst the pixie cap orchids to find one.

About a month ago a single leaf appeared on the ground. The leaf is heart-shaped, green on top and purple below. About now a slender, fragile stem grows vertically from the leaf and puts on as many as six brown mayfly orchid flowers, each tinged lightly with yellow and green. About 50mm underground are two pea-sized tubers which are

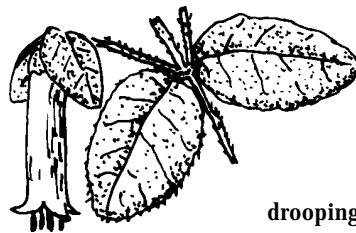
edible. The whole plant grows no taller than about 150mm and blends well with its background.

The labellum has two nectar glands, which attract small gnats to do the pollination. The mayfly orchid has an unpleasant scent resulting in it being called the dead horse orchid. Look for them between now and the end of August on Fingal Headland.



RED CORREA, *Correa reflexa*.

An erect shrub that grows to 1 metre high. The leaves are broad, opposite and heart-shaped, covered in star hairs and dotted with oil glands.



The flowers are a drooping, red, tubed bell, starting with an acorn like cap, generally red passing into white then green towards the tip. There are four lobes at the tip and 8 stamens. Each flower has a "sunshade" of two leaves. This plant is so common that you will see it on any track in the area.

June 25th-30th.

- * King prawn season.
- * Bream head up the creeks.
- * Greenhood orchids flower in abundance under the trees.
- * Some of the plants in flower include *Lobelia gibbosa*, *Woolsia pungens*, grannys bonnet and black-eyed Susan.
- * Blue-faced honeyeaters feed on flowering trees.
- * Wombat mothers have last year's cub at heel and this years in the pouch.
- * June and July are the months of coldest water temperature, 13°C.
- * Inky cap fungus appears.
- * Foggy mornings are more common.
- * Red mistletoe flowers appear hanging in trees.

THE NIGHT SKY

The Winter Solstice occurs on June 22nd. From that day on the days will start getting longer. This is the signal for most of the plants and animals to start breeding. Birds and animals mate, build nests and time their parenting for the peak flush of spring.

Arcturus (ark-Tu-rus) is Greek for "the bear's guard" and is part of the constellation *Bootes*, The Herdsman. Arcturus is orange-red and at 22 times the diameter of our sun is the brightest star in the Northern (celestial) Hemisphere. On the night of the 25th June at 8.00 p.m. look for it on compass bearing of 346° and an elevation of 38°.

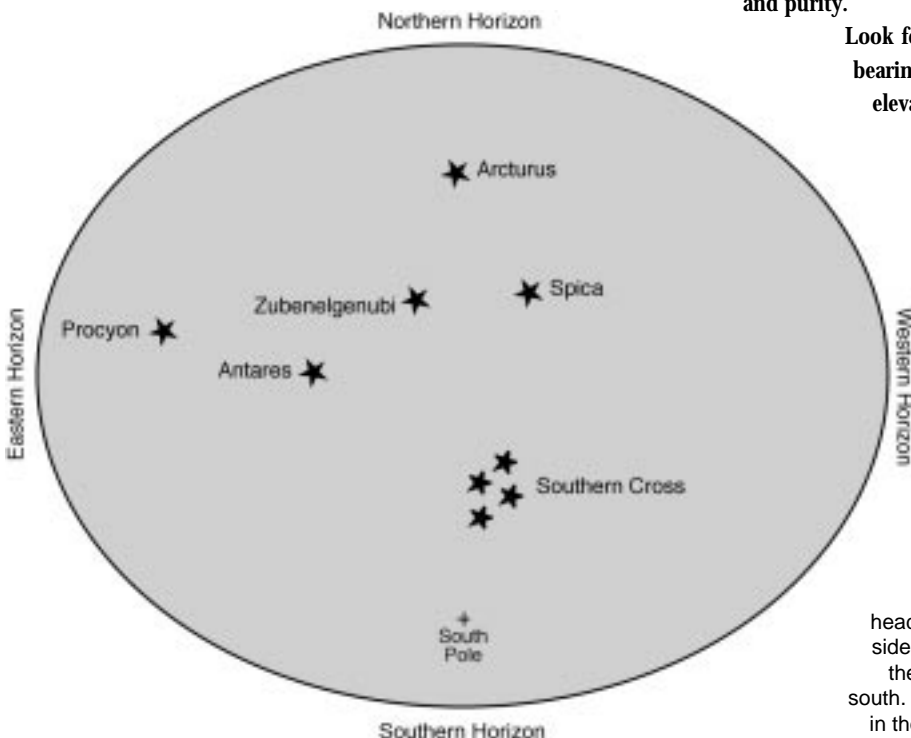
Zubenelgenubi (zoo-ben-el-je-nube) is Arabic for the "southern claw of the scorpion". This star, with a name that just rolls from the lips, is part of the constellation *Libra*, The Scales.

Long ago this star was part of the pincers of *Scorpio* The Scorpion, but has since drifted away to form *Libra*, the only constellation that is not named after a life-form. The other wonderfully named star in *Libra* is *Zubeneshchamali*.

Look for Zubenelgenubi on a compass bearing of 12° and an elevation of 72°.

Spica (Spi-ka) is Latin for "ear of corn". It is six hundred times as bright as the sun and glows blue-white from a distance of 220 light years away. Spica is held in the hand of *Virgo*, The Virgin, goddess of justice and purity.

Look for Spica on a compass bearing of 314° and at an elevation of 65°.



The Night Sky

For the evening of June 25th, 8pm, Eastern Standard Time.

To use, hold this diagram above your head so that the northern side is pointing north and the southern side faces south. The stars will appear in the positions shown on the diagram.

GRASS TREE, blackboy, *Xanthorrhoea*.

Aboriginal names for this plant are Boomeri, Nundoo and Pummiri. There are several species of this distinctive and highly Australian plant living in the Nelson Bay area. They are *X. australis*, *X. macronema*, *X. minor* and the most common *X. resinosa*.



The word *Xanthorrhoea* comes from the Greek *Xanthos*, yellow and *rheo*, to flow, referring to the resin. The resin can be

collected as flakes, crystals, powder or congealed lumps from the base of the dead leaves on the stump.

Grass trees usually have a short trunk covered with the blackened remains of dead leaves. From this stump grows a crown of long, slender, tough leaves with sharp edges. These arching leaves form a "skirt" as they reach towards the ground. Bats and other animals are known to take shelter under this canopy. The tender base of the young leaves growing from the centre can be eaten for a fibrous, tasteless snack.

Areas burnt by summer bushfires will now have grass trees in flower. A few months after a fire the tall, straight, green, flowering-spike grows to a height of about 2 metres. When dried this flowering spike is a suitable wood for starting a fire without matches, using the "drill stick" method or the "fire saw". The timber in this flowering spike is light and strong. It has a hard outer skin and a soft pithy centre and grinds quickly to a hot



The nut

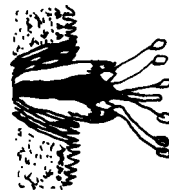


June 25th-30th.

powder. The dried stem was also used by the Aborigines as a spear, usually tipped with a piece of hardwood.

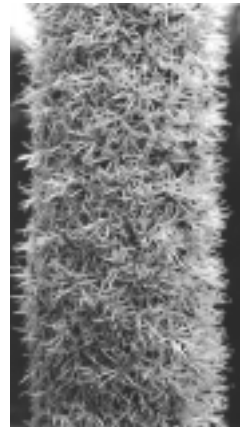
After a fire the grass trees all flower together. Hundreds of creamy-white flowers appear from a velvety cylinder at the top of the flowering spike. This is a time of plenty for nectar-feeding birds. Each flower produces a large drop of nectar and continues to do so for

weeks. The nectar is very sweet and can be easily sampled by encircling the flowering stem with the thumb and index finger and running them upwards. Nectar will flow down the outside of the hand. Aborigines soaked these flowering spikes in water for a sweet drink and often left the mixture for a few days to ferment.



The flower

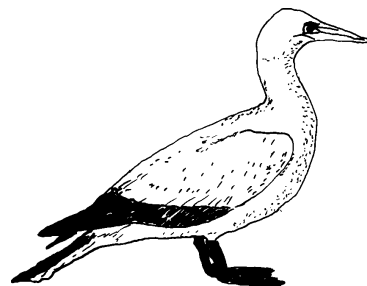
The resin of this abundant and useful plant has been harvested for use as a varnish. Aborigines used the resin as a cementing agent for attaching stone axe heads and spear points to wood.



AUSTRALASIAN GANNET, *Morus serrator*. Looking out to sea you may be lucky enough to see gannets plunging into the sea, head first, wings folded back. Fishermen have long used them as an indicator of tailor or tuna, working a school of small fish.

Once fishermen also used gannets as bait in lobster pots. The gannet does most of its breeding October-May in New Zealand.

It is most common in this area during winter.



July 1st-8th.

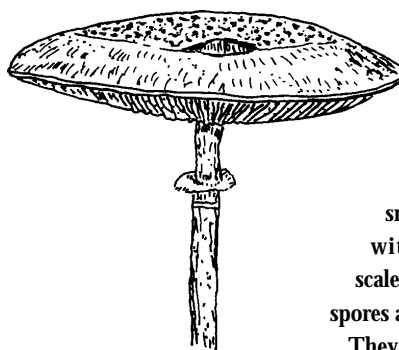
- * Winter westerlies thrash boats on their moorings.
- * Sand flathead males wait at Tomaree for passing females heading for Providence Cove.
- * Dusky flathead spawn in the estuary.
- * Fairy penguins lay their eggs between July and November.
- * Fantail cuckoo calls can be heard.
- * Blackthorn in flower.
- * On the 5-7-1993 a southern right whale entered Port Stephens for a few hours.
- * Wattles show early signs of flowering.
- * Bushfires are lit for fuel reduction.
- * Magpies start collecting nest material.
- * Albatrosses can be seen out to sea.

SLENDER PARASOL MUSHROOM,

Lepiota gracilentia.

This fungi is not particularly common but is edible with a pleasant nutty taste.

Look for a cap, up to 10cm across, which has a dark



brown
central
"button".

The top of the cap is flat or slightly convex, smooth, brown with fibrous scales. Gills and spores are white.

They will be seen between April and August, especially after rain, in the grass, under trees and on the edges of forest.

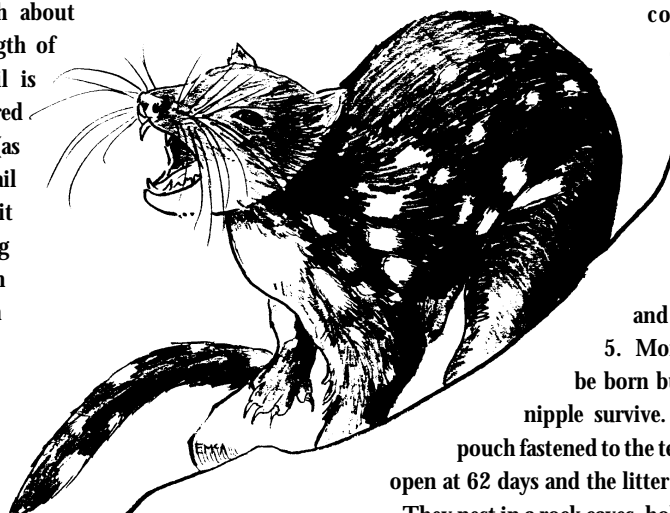
SPOTTED-TAILED QUOLL, *Dasyurus*

maculatus, tiger cat, native cat. Aboriginal name kindeeng. One of the largest carnivorous marsupials, this ferocious predator would love nothing better than to find a way into your chook house and slaughter the lot. This habit was the downfall of the species and its place in the bush has been replaced by the fox and feral cat.

Look for a cat-sized animal with a pointed snout.

Head and body length about 400mm and a tail length of slightly less. The tail is thickly furred and covered with large white spots (as is the body). If the tail does not have spots on it then you may be looking at the very rare eastern quoll (virtually extinct on the mainland but doing well in Tasmania.) The fur colour is generally brown above and pale below.

The spotted-tailed quoll spends some of its time in trees and the rest on the forest floor. On cool winter days they often bask in the sun. The quoll will often crouch down on the dead limb of a tree and remain motionless, with the tail



hanging down. The quoll preys on birds, rats, possums, gliders, small macropods and reptiles. Death comes from a bite to the back of the head or neck.

During courtship males growl and utter staccato cries. Sexually mature at one year, mating is a prolonged affair sometime between April and July. During this time unmated females come on heat every 3 weeks for about 3 days. Females in this condition develop a swollen neck region, presumably to protect them from the males grip of the neck during copulation which can last up to 8 hours.

Gestation is 21 days and the average litter size is 5. More young than that may be born but the first six to find a nipple survive. The young stay in a pouch fastened to the teats for 47-50 days. Eyes open at 62 days and the litter is weaned at 4 months.

They nest in a rock caves, hollow logs or trees. At 18 weeks the young are fully independent. The quoll is believed to have survived in the Boulder Bay area.

For the quoll to survive we must leave our forest areas intact.

MARINE CRAYFISH, lobster, *Jasus*

novaeollandiae Aboriginal name Wirrah. Wandering our coastline you will notice round fishing floats 50 metres off the rocks. Below this polystyrene float is a trap for catching marine crayfish (lobsters). Up until 30 years ago they could be caught inside Port Stephens.

Lobsters are delicious to eat and bring a high price. Southern rock lobsters spend the first six months of their life in a transparent planktonic form, growing by a series of moults and travelling the ocean currents. They finally settle on the rocky seabed. Young crayfish shed their hard external shell every 6 to 10 weeks until they are 100mm long. This shedding becomes less frequent. Adults shed twice in a year. After mating the female carries with her



from 100,000 to half a million eggs for 3-4 months. It is illegal to take female crayfish carrying ova. Females can be recognised by two small reproductive apertures at the base of the third pair of walking legs, and the last leg has a small pincer in addition to a claw at the tip. It takes 6-7 years for lobsters to reach maturity.

Mature crayfish are green in colour and spend their time wandering the reefs in search of molluscs, crabs, crayfish, sea urchins and seaweed. It is believed that crayfish talk to each other by means of squeaks emitted when they rub their feelers on a rim below their eyes. When trapped in a pot they transmit signals to warn off other crayfish. If they lose a leg or two they will grow them back.

BLUE FACED HONEYEATER.

Entomyzon cynotis. The best time to see this large and easily-recognised honeyeater is in the nesting season from midyear on. It will probably lay its two eggs in an

July 1st-8th.

abandoned nest and set about feeding itself on nectar, insects, pollen, berries and fruit (especially bananas). It catches insects by swooping low over the water or by prising under the bark of trees with its strong beak.

Look for a large bird with a black face and a large bright blue patch around the eye. Noisy miners will let you know when they are around by noisily attacking them in an attempt to drive them off.



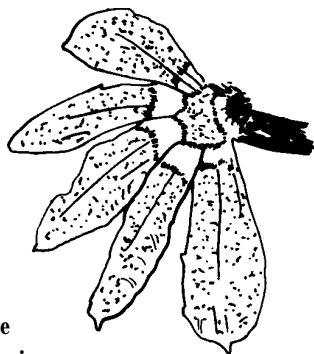
BEACH FAN FLOWER, scented fan flower,

sweet fan flower, blue berry scaevola, *Scaevola calandulacea*.

This sprawling succulent herb can be seen on the sand dunes at Fingal Bay or Stockton Beach. It is a very useful plant for stabilizing shifting sand.

The leaves are succulent, 4cm long, thick and sparsely hairy on both sides, broadest in the upper part and tapering gradually to the stalk.

Flowers form most of the year and consist of five sky-blue petals in the shape of a hand (or fan). The base of each petal is white and the throat of the flower is yellow. The flowers are followed by a rounded fleshy fruit about 1 cm across, changing from purple to black when ripe. These fruits are edible and taste slightly sweet and salty.



The name *Scaevola* comes from a Roman hero Caius Mucius Scaevola who, when captured during an Etruscan siege of Rome showed his contempt of pain, after being threatened with torture, by thrusting his right hand into the fire.

July 9th-16th.

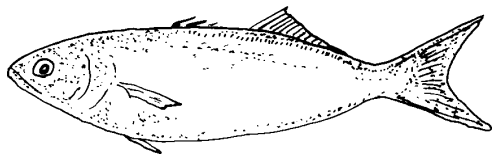
- * Estuary perch and bass spawn in brackish water.
- * Young galahs, born last year, fly up to 50 km from their birthplace in flocks of immature birds.
- * Male echidnas look for females.
- * Female echidnas develop a pouch and their milk glands get bigger.
- * Golden wattle and prickly moses are in flower.
- * Swamp May has seed pods formed (bush tea).
- * Some of the plants in flower are coast tea tree, crimson bottlebrush, *Epacris obtusifolia* and drumsticks.
- * It is a real challenge to find a christmas bell still in flower (my record is August 14th).
- * Case moth caterpillars are active, cutting sticks.
- * Earthworms wander about after rains.
- * Frogs call on still nights.

TAILOR, *Polatomus saltarix*.

Tailor can be caught in the Bay at any time of the year, but winter is the best time to fish for them off the beaches and headlands. Their travel up the east coast occurs with predictable regularity each year. By February the tailor are small, 500 grams, and are called choppers. Feeding on small fish like pilchards, yellowtail, whitebait, garfish and mullet by April, they weigh 1 kg.

April, May and June are good times to catch them as they make their way north. By the end of winter they are as thick as thieves on Frazer Island (Qld) where fishermen stand shoulder to shoulder to reap nature's harvest.

The presence of tailor is often indicated by birds (terns) diving repeatedly into the water. These birds are



not after the tailor but the terrified fish they are feeding on. If you spend enough time on the water you may eventually see one of nature's grand spectacles, a school of voracious tailor tearing into a mass of small fish, only to be themselves surrounded by a pack of killer whales, come to demolish the tailor in giant, crunching gulps.

BACON AND EGGS, variable bossiaea, *Bossiaea heterophylla*.



Growing to 1 metre tall this slender herbaceous plant manages to thrive in dry rocky places. The name *Bossiaea* comes from Boissieu de la Martiniere, the doctor and botanist on the French exploration ship *Astrolabe*.

Heterophylla is Latin for variable-leaved. Leaves on this plant vary in size and shape and are few in number so as to reduce transpiration and help it survive the dry locations it lives in.

The pea flower is a bright yellow, orange and red, and hints at the common name "bacon and eggs".

Seeds are contained in a flat pod which opens down both edges.

PIED CURRAWONG, *Strepera graculina*.

Currawongs breed in the tall timbers of the high country of the Great Divide.

In the winter months especially, they invade places like Nelson Bay to eat small birds, carrion, insects and berries. They are especially fond of female stick insects, full of eggs. When the gymea lily is in flower currawongs can be seen snacking on the nectar-marinated insects within. Like magpies they will help pick your lawn of grubs.

This is the bird that is responsible for the "wolf whistle". At first glance they look a lot like magpies. The currawong's head and back are black all over with a few patches of white on the tail feathers. Magpies have a large white patch on their back. Currawongs have a bright yellow ring around their eyes and a black beak.



The currawong is able to regurgitate pellets of undigested material. Prod them apart with a twig and see what they've been eating: berries, beetle shells and

sometimes even bones.

Currawongs do nest in Nelson Bay, a fact that may be brought to your attention noisily when it tries to raise a channel-billed cuckoo. The female cuckoo lays its egg in the currawong's nest and the hapless host has the job of feeding a chick that grows much larger than itself. Much of the food it brings back to the nest consists of chicks from the nest of any species of bird unlucky enough to try and raise a family near a currawong nest. When it was found that currawongs were flying across to Cabbage Tree Island from the mainland and dining on Goulds petrel chicks, the offending birds were shot.

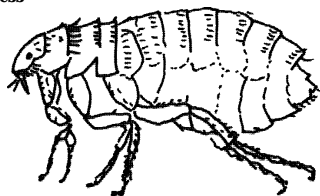
FLEA, Aboriginal name Poroolook.

Almost any mammal you handle will have fleas scurrying through the fur. If we spent winter nights wrapped in animal skins and slept with the dogs we would constantly have fleas also.

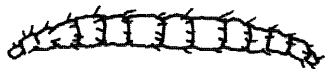
Fleas are flattened laterally and have large hind legs for jumping (about 150 times their own length).

They are blood sucking parasites that live on birds and mammals.

Sometime after snacking on their luckless host, fleas lay eggs on their host's hair. The eggs hatch into larvae and eventually drop to the ground to pupate.



Larva are legless, eyeless worms with thirteen body segments and usually live in the host's nest. They are white and live not on blood but pieces of skin, straw and dust. Flea lava spin a cocoon in some crack near its feeding place. Inside the cocoon a pupa is formed from which the adult flea eventually emerges. The whole life cycle takes from three to eleven weeks, depending on the species.



The fleas can lie in their cocoons for a long time and it is the stimulation of the vibrations of their host moving about that causes them to emerge.

As carriers of plague, fleas have claimed more lives than all the wars ever fought.

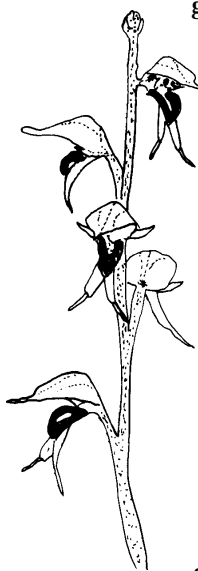
Fleas leap with an acceleration of 140gs, fifty times that of the space shuttle. Fleas can survive months without feeding and can revive after being frozen for a year.

Of the 2400 flea species, 120 of them can transmit

July 9th-16th.

plague and fewer than 20 species bite man.

PIXIE CAPS, *Acianthus formicatus*. Pixie caps probably outnumber any other species of plant in this area. During winter they spread their single leaf on the ground, heart-shaped, 20-40mm long, green on top and purple underneath. From the leaf grows a single stem to a height of 150mm, bearing up to 10 red-brown, hooded orchids.

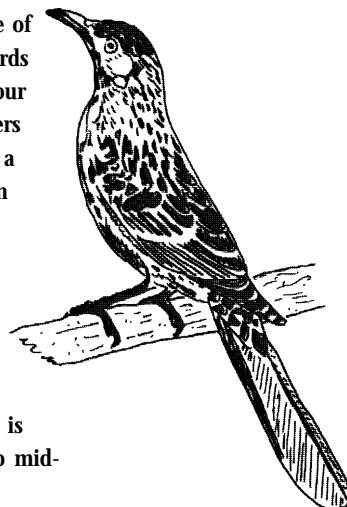


Despite its fantastic abundance, this orchid is easy to miss because it grows low to the ground and is coloured green and brown. By spring, the plant has withered away to nothing on the surface and spends the rest of the year as a pair of pea-sized tubers about 70mm below ground, safe from drought and bushfire. These tubers are edible and easily dug up in the sandy soil. The flavour is watery, crunchy and quite pleasant.

The fascinating name *formicatus* is rather disappointingly Latin for "hooded".

RED WATTLEBIRD, *Anthochaera carunculata*. The term wattle refers to what looks like an ear lobe, red in colour attached to the side of the face. These birds would like to pick your garden clean of spiders and finish off with a dessert of nectar from your flowers.

They are not in the Bay all year round. In autumn they migrate in search of winter flowers. Nesting is from mid-winter to mid-summer.

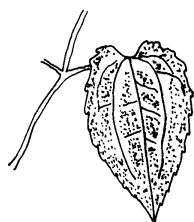


July 17th-24th.

- * Maroonhood orchids appear.
- * Gynea lily in flower.
- * False sarsparilla vines in flower.
- * Wax flowers bloom.
- * Dingo pups are born.
- * Lilly pillly in fruit.
- * Cold weather causes some snakes, bats, lizards and small mammals to seek a secure shelter and lapse into a winter torpor.
- * Silver gulls move to nesting islands with low vegetation.
- * July is the month of the least number of hours of sunshine, 6.

FOREST CLEMATIS, old man's beard, headache vine, *Clematis glycinoides*.

A wiry climber that flowers from now until the end of spring. Abundant cascades of white flowers, each 3 cm in diameter, brighten up any bush that carries the weight of this vine. Forest clematis will climb to a height of 20 metres.



A patch of this plant flowers annually beside the car park at Kingsley Beach, Boat Harbour.

Leaves are in groups of three with three parallel veins and are generally toothless. Young leaves are different, being a single large dark green leaf with pale markings around the veins.

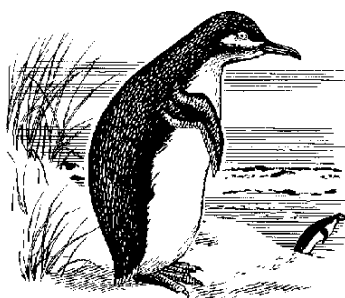


The leaves have a reputation as a cure for headache. To administer, thoroughly crush the leaves in the hand, holding for a moment to warm the vapours slightly. Inhale the fumes. The effect of doing this can be watering eyes, stinging nose and an exploding head, which lasts only a short time. Use with caution.

Male and female flowers are carried on separate plants. The male flowers have long stamens and the female flowers have ovaries. The fruit is 4cm long, narrow and silver-plumed.

FAIRY PENGUIN, *Eudyptula minor*.

You may be lucky enough one day to swim in the surf with a fairy penguin. With a pair of binoculars, from the top of Stephens Peak, you may see one of these birds fishing in the waters off Wreck Beach. The fairy penguin can be seen swimming the waters of Port Stephens and in Nelson Bay harbour. They make a happy barking sound to keep in touch with each other. This is the only penguin that breeds on



Australia, and Port Stephens is about as far north as they come.

Fairy penguins come ashore after dark and leave their burrows

before first light. From July on there is much activity around the colonies on Broughton Island. One parent will sit on the 2 eggs for up to 10 days and then be relieved by its mate. When the chicks are two weeks old both parents will have to go to sea to get enough food for the family of four. Some penguins will raise a second family in the same season. At about 30 cm tall, this is the smallest penguin of the world's seventeen penguin species. Their burrows amongst the tussock grass may be as far as 300 metres from the water's edge. They sensibly wait an hour after dark to come ashore.

The young disperse about mid October. Three years later they will return to the area they were born in to breed. If they survive the predation of sea birds, sharks and sea lions they may live to 20 years of age.



BROWN ANTECHINUS, *Antechinus*

stuartii. Aboriginal name *Mirrin*. The most common small mammal found in the Nelson Bay area. Over the next two weeks all the males will die. The only hope for the survival of the species is that some males will be born in the next litter.



In mid July all males become sexually active and mate with as many females as possible. Mating sessions can take as long as 12 hours. During these few weeks of radical promiscuity the males do not eat. They live on their own body tissue, their stomachs become thin and ulcerated and their bodies fall victim to disease and degeneration. Aged exactly 11 months and 3 weeks all the males die a reasonably hideous death.

This die-off occurs around August 12th in Nelson Bay.

By then the females give birth to as many as 12 young. They are born in a very undeveloped state, diminutive, pink, embryonic, ant sized, they crawl about until they find a teat to hang on to.



The pouch is just a few loose folds in the skin around the abdomen and is completely open.

For five weeks they hang on by their mouths with the grip of Hercules. Mum scampers about in the dark with family firmly attached and as they get older they drag along the ground, bouncing over rocks and twigs. Eventually the babies are so big and numerous that the mother's feet barely touch the ground.

It is time for the family to stay at home in the nest (usually a leaf-lined tree hollow). The mother gets the babies to let go by shaking her body and performing a somersault.

The young are weaned after 3 months. All the effort is put into this one litter and over the next year the female will also die, although a few will live on to breed a second year. Owls and feral cats are the main predators of this marsupial mouse.

The antechinus looks like a mouse with a head and body length of 120mm and a tail length of 100mm. The face is much more pointed than the house mouse and the teeth are numerous sharp needles.

It shares its habitat with another similar-looking marsupial mouse, the yellow footed antechinus. You can

July 17th-24th.

tell them apart as follows.

The yellow footed antechinus has a bright white ring around its eye which the brown only sometimes has. The yellow footed antechinus is greyish-brown above, whitish brown below, and usually has a reddish-brown band of fur between the two layers. The brown antechinus is uniformly grey-brown all over.



The antechinus is a savage little carnivore and will happily pounce on a house mouse and crush its skull or neck with a bite. It will then eat the mouse, leaving its skin turned inside out. Insects, lizards, worms and anything that moves will be eaten.

This species is well distributed over the Nelson Bay area. You may have some visit your home and even come into your house. The biggest populations are on Gan Gan Hill and around the Corlette water tank.

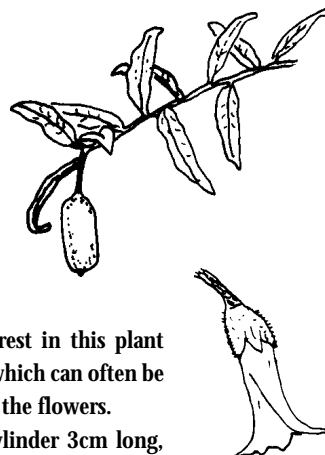
Antechinus help pollinate banksias by visiting the flowers at night to enjoy the nectar they produce.

APPLE BERRY, *Dumplings, Billardiera scandens*. This slender climber grows to 3 metres and can be seen everywhere in the Nelson Bay area.

The leaves are alternate with wavy margins, furry and 20mm long.

The pale-yellow, drooping, bell-shaped flowers hang from slender stalks. The real interest in this plant comes from the fruit which can often be seen the same time as the flowers.

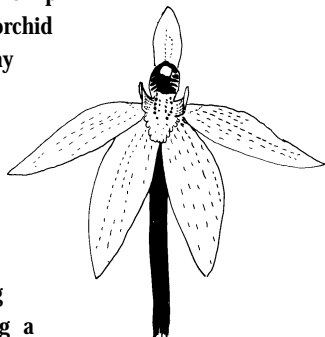
The berry is a cylinder 3cm long, green, yellow or reddish. This furry fruit gradually changes to a brown or purple colour, eventually falling from the vine. At this stage the fruit is edible, with a flavour likened to stewed apples.



July 25th-31st.

- * Mopoke calls at night.
- * Crickets call in the grass at night.
- * Female echidna lay one soft egg.
- * Scrub wrens build their nests.
- * Baby ringtail possums leave the pouch and start riding on their mother's back.
- * Both red-tailed and yellow-tailed black cockatoos can be seen in the area.
- * Swamp wallabys come closer to settlement as their natural food supply dwindles.

BLUE FINGERS, *Caladenia caerulea*. The first of the "finger" orchids to appear, to be followed later in the spring by white fingers and the much more common pink fingers. This ground orchid springs up in open sunny areas, particularly along the fire trails in the Glovers Hill Catchment Area. The whole plant is just 150mm high.

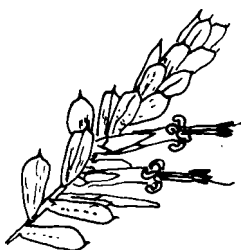


The leaf is long and thin, resembling a blade of grass. The orchid flower is 25mm across, sky blue and has a "landing pad", lined with 2 rows of yellow clubbed calli to receive the small bees, flies or insects that will help pollinate it. The labellum is believed to be spring-loaded to momentarily trap the insect, thus ensuring a good dusting of pollen. Underground, as in most of the ground orchids, lies an edible tuber.

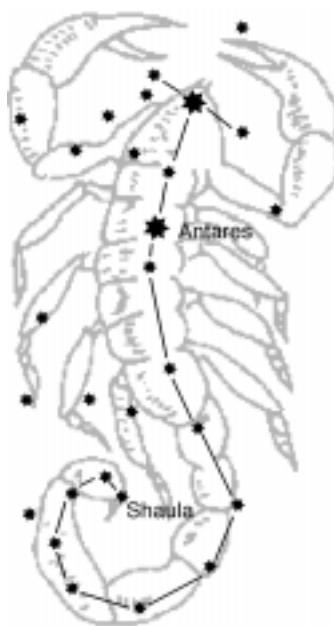
FIVECORNERS, *Styphelia viridus*. This stiff shrub keeps its green flowers close to the stem and surrounds them with radial masses of sharp-tipped leaves.

It grows to 2 metres high and prefers the shade of larger shrubs.

The flower is a green tube, 17mm long, having curled back lobes and a soft hairy throat with long stamens hanging out. It is a flower



SCORPIO



SCORPIO

The scorpion stands out clearly from the familiar stars around it. Scorpio and Orion are in opposite parts of the sky, one going down while the other rises. Orion was asked where in the sky he would like to be placed. He said as far away from that Scorpion as possible. It was said that Orion boasted of his strength, that neither man nor beast could beat him. Jupiter, on hearing this, sent Scorpius to bite him on the heel.

ANTARES (an-ta-rez) is Greek for "rival of Mars" (in colour). It is the brightest star in the constellation Scorpio. Antares is 400 times the diameter of the sun and beams fiercely red as the heart of the Scorpion. On the evening of July 25th at 8pm, Antares can be seen on a magnetic bearing of 8° and at an elevation of 83°.

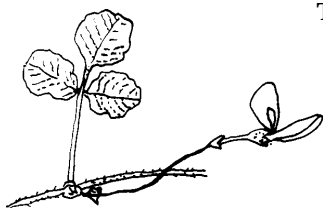
SHAULA (sho-la) is Arabic for "sting of the tail" and can be seen on a bearing of 100° and an elevation of 74°.

pollinated mainly by honeyeaters. The leaves are stiff, flat and end with a sharp point.

The fruit is five-cornered, green, translucent, 7mm diameter and edible, having a thin layer of pleasantly sweet flesh surrounding the stone.

SCARLET CORAL PEA, running postman,

Kennedia prostrata. This brilliantly-coloured pea keeps its beauty close to the ground.



The leaves of this prostrate perennial herb occur in groups of 3, have wavy margins, hairy below and are 5-30mm long. The flowers are scarlet (or

postbox red) with a yellow centre.

The pod is a hairy, brown, cylinder 40mm long. The leaves can be made into a herbal tea by boiling in water. This plant is best seen on Morna Point or around Boulder Bay from now till the end of spring.

ECHIDNA, *Tachyglossus aculeatus*, Aboriginal

name Makree. The spiny anteater is still abundant in this area. It rips open ant nests with its claws and collects the ants on its long sticky tongue. Gan Gan Hill is a likely place to look for them.



Front

A solitary animal, its body is covered with spines and hair. You are more likely to see one foraging around dawn or dusk. When threatened they dig straight down and erect their spines. Mating is in July and August and at this time a single female may be followed by as many as eleven males. In the population there are three times as many males as females. The male has a spur on the hind leg but no venom gland.

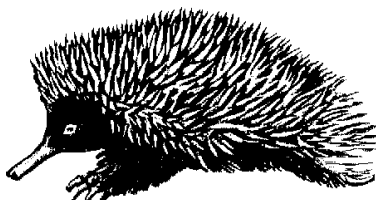
Both the male and the female have what appears to be a pouch. Two weeks after copulation a single soft-shell egg is laid and transferred to the pouch. Ten days later the egg hatches and the young spend a further 3 months in the pouch, sucking on milk, till the spines get too uncomfortable.



Rear

The young can be first seen from September to November when they are a year old. When itchy the echidna is able to scratch itself with the extra long claws it has

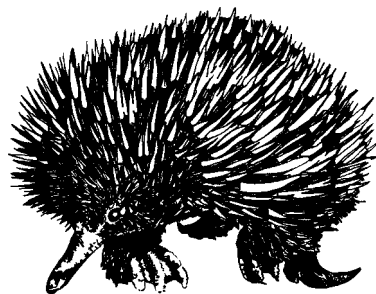
on its hind legs. They sleep amongst tree roots, in rock crevices or hollow logs.



July 25th-31st.

Ants and termites can reach pestilential levels without the natural control of the spiny anteater.

After kangaroos and possums this is the most likely mammal that you will see. They are active in the day time and can often be seen wandering along the side of the road. Weighing in at 6kg, an echidna can eat 2 kg of termites in a day. In the process it also uncovers worms, beetles and moth larvae which it also eats. They have the worst possible car sense.



GREY BUTCHERBIRD, *Cracticus*

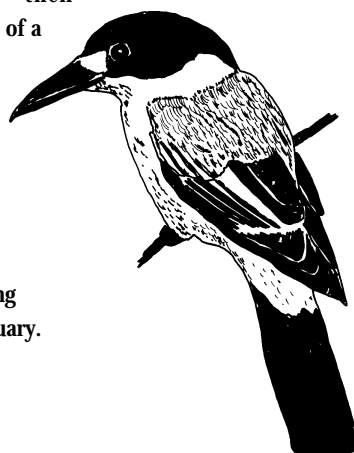
torquatus. Fabulous singing is what will alert you to the grey butcherbird. Look for the distinctive downward turned hook on the upper beak.

A flesh-eater, this bird will have its eye on your pet budgie. As a compromise you could hand feed it meat. Its method of attack is to swoop down from its perch to strike small birds on the ground. The victim



is then wedged in the fork of a tree and torn apart.

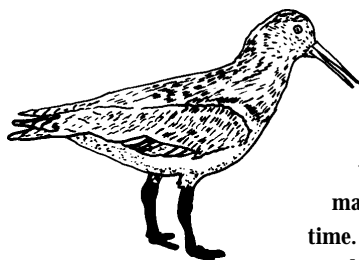
These birds live in permanent territories so if you see one around your house, get acquainted. Breeding is from July to January.



August 1st-8th.

- * Eastern rosellas engage in courtship.
- * Echidna egg "hatches" and young attach to a teat.
- * Cup fungi appears.
- * Bandicoots start breeding.
- * Occasional snow on Barrington Tops.
- * Wattle Day, some wattles are in bloom.
- * Cup moth cocoons on gum leaves.
- * Young foxes start exploring and playing.
- * Pee wees start building their mud nests.
- * Dagger hakea in flower.
- * Antechinus mate.
- * A whale entered Port Stephens 7-8-1995.

OYSTERCATCHER, *Haematopus ostralegus* has a long, pointed, red beak, red legs and can be seen wherever there are shellfish.



The sooty oystercatcher is black all over and the pied oystercatcher is black and white. This is mating and breeding time. Courting birds run side by side, calling loudly. Oystercatchers will

lure you away from the nest by pretending to be injured, trailing a wing and even "doing a perish" by rolling about on the ground. The local population is declining in numbers because their nests are built on the beach where they are disturbed by people.

Oystercatchers can be seen murdering pipis on Stockton Beach, or roosting in a dense group all standing on one leg with their bills tucked under their back feathers, on Corrie Island.

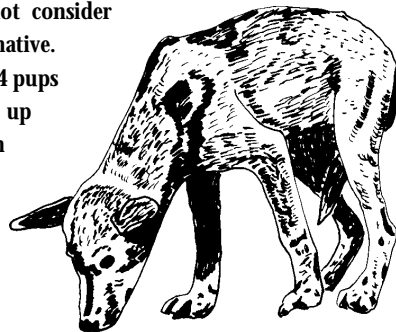
DINGO, *Canis familiaris dingo*.

Aboriginal name tuppín, mir-ree.

The enemy of sheep farmers, the dingo has only been in Australia for about 6 thousand years. Dingoes will eat any animal they can kill, and sometimes kill or savage other animals (like sheep) without eating them. Whilst they do

help to keep the rabbit population down they also eat wallabies, wombats, reptiles and birds. There is some debate as to whether the dingo should be eliminated from National Parks. Some people do not consider them to be native.

About 4 pups would make up a litter, born about August. There are dingoes on Yacaba and Corrie



Island and they are common in the Myall Lakes National Park. Dingoes are rare on the Tomaree Peninsula and that sandy-brown coat that flashes across the track is more likely to be a fox.

At four months of age, in November, dingo pups will leave the den and practice hunting. At five months they will be weaned and abandoned. The dingo breeds once a year and can have as many as twelve pups in a litter. The same den is used each year for breeding. There will be many other dens for resting spread over the hunting range.

Dingoes cannot bark but can communicate over long distances by howling.

WONGA WONGA VINE, *Pandorea pandorana*. Around spring this vigorous woody climber spreads throughout the canopy of nearby trees and produces cascades of bell-like flowers. Each flower is a creamy tube

15 mm long, with the mouth curling back to show a red-tinged throat.



Judith Wright in a poem "Wonga Vine" called it *my white waterfall*. The name *Pandorea* comes from the Greek God *Pandora*, the first mortal woman, on whom the gods bestowed gifts.



The fruit is a large capsule, 50mm long, which sheds a large number of tightly packed winged seeds in November. Morna Point is a good place to look for the Wonga Wonga Vine.

BANDICOOT, *Isodon macrourus*

Aboriginal name *bookut*.

Conical pits dug in the bush are a sure sign of bandicoots. Bandicoots have a long pointed nose and look like a large rat.

They dig these holes

at night with their

front feet, in search

of the larvae of scarab

beetles, insects, snails,

slaters and soft tubers.

While this diet may make them useful around the garden their continual digging is not.

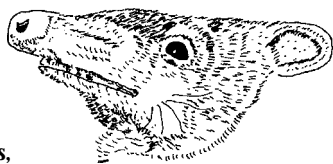
Bandicoots are the principal host of the dog tick to which they have developed an immunity. To help scratch themselves they have two small joined toes on the hind feet, used to groom the fur.

You may hear bandicoots bounding about at night sniffing the ground and uttering a shrill grunt-like squeak.

Bandicoots are very common on the northern shores of Port Stephens and in the Myall Lakes National Park. They are much less common in the Nelson Bay area due to predation by foxes.

Bandicoots breed up very quickly, the female commonly bearing 3 litters of up to 4 young each season. By the end of the season these young will have begun to breed. Normally a solitary animal, males and females only come together for mating in winter. The male persistently follows the female until she accepts him.

The gestation period of 12.5 days is the shortest of any mammal in the world. When the young are about 50 days old a second litter may be started. By day bandicoots spend their time in a nest in a shallow depression lined with grass and leaves.



August 1st-8th.

KOOKABURRA, *Dacelo gigas*

Aboriginal name *kookandy*. If you are sitting out in the bush waiting for dark the kookaburra will probably be the last of the daytime birds you will

hear call. Similarly, at

the first hint of

daylight, you can be

woken up by its

rollicking laugh.

The bird is proclaiming its territory and its neighbours reply. They are most often seen perched on a fence or branch, staring at

the ground looking for movement. This might be snakes, lizards, rodents, insects, small birds (like your pet budgie and your pet goldfish). Kookaburras form permanent pairs and spend their whole life of up to 20 years in their selected territory.

Two eggs are laid in September in a tree hollow or a termite mound. (The kookaburra digs a hole in the mound and the ants seal around it, they then leave each other alone).

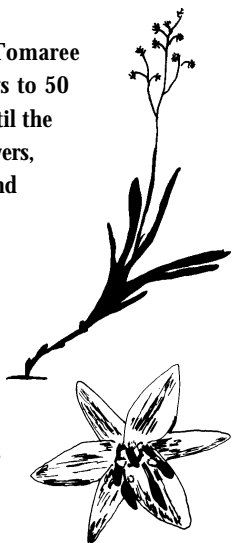
Kookaburras have a very advanced social system. Only the dominant male in each family group breeds. Young kookaburras stay with their family group for 3 years to help raise and protect the babies and defend the territory.



BLUE FLAX LILY, *Dianella*

caerulea.

Common all over the Tomaree Peninsula this tufted herb grows to 50 cm tall. Any time from now until the end of Spring the rich blue flowers, with yellow anthers, will command your attention. These flowers tend to hang downwards, showing their "best side" to the ground. By November they will have turned into a blue to purple berry, glossy and 1 cm across. These berries can be used as a blue dye. Both the roots and the berries are considered to be edible.



August 9th-16th.

- * This week all male brown antechinus die, leaving the females to raise the next generation.
- * Koels arrive from P.N.G. to lay eggs in other birds' nests.
- * Kookaburras lay 2 eggs.
- * This year's baby quolls become independent.
- * King crickets lay eggs in banksias.
- * Gnat orchids are in flower.
- * Painted lady butterflies emerge.
- * Pardalotes dig nest burrows.
- * Welcome swallows arrive.
- * *Euphrasia collina* is in flower.

FEATHERTAIL GLIDER, *Acrobates*

pygmaeus. Aboriginal name Gooroe Gooroe.

Grey on top and creamy white below this tiny glider (10-15g) is able to glide up to 20 metres between trees. The tail is 8cm long, as is the head and body length.



The tail is flattened with short hair on the upper and lower surfaces and long stiff hairs along each edge. The tail is used in flight to steer and brake in flight.

The gliding membrane extends from the elbow to the knee. It feeds on nectar, manna, sap, insects and tree blossoms.



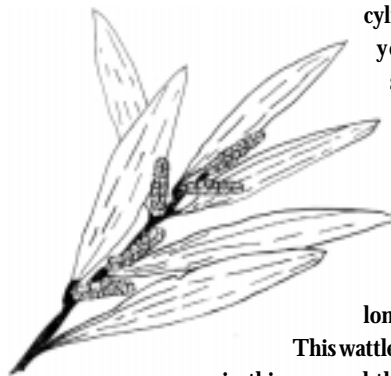
After larger possums have made cuts in the bark of trees, groups of these diminutive gliders will appear to feed on the flowing sap.

Feral cats are the feathertail gliders' main predator, followed by owls and quolls. The nest (drey) is spherical and made of overlapping gum leaves in a hollow limb. Females carry up to 3 young in a pouch. Breeding is any time from August to January.

SYDNEY GOLDEN WATTLE,

sallow wattle *Acacia longifolia*.

A robust sprawling shrub to a small tree 1-8 metres in height. The rich yellow-green foliage contrasts well with the densely packed cylindrical, golden yellow flower spikes, 4 cm long.



The leaves are alternate 10 cm long, with prominent longitudinal veins.

This wattle is very common in this area and this is the time of year to see it at its best.

The leaves of the Sydney golden wattle are recorded as having been used by the Aborigines as a poison to stupefy fish.

GALAH, *Cacatua roseicapilla*. Galahs are real characters. They will bite chunks out of your verandah rail, snip your television cable and chase away some of the less aggressive birds.

A pair of birds will nest in the same tree every year and defend it against other birds. There is no defence, however, against the chain saw. In this area there is great competition for nesting hollows and the survival of this species is dependant on the retention of mature trees with natural hollows.

Galahs like to strip the bark in a large area around their hollow, so look for this when scanning the trees





with your binoculars. Galahs also have a habit of wiping their beaks on the branches around their nest. Females have pink eyes and the males brown.

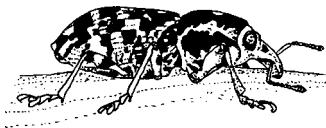
Both birds share the incubation of 2-6 eggs. Fledglings, after leaving the nest, will form creches of up to 100 birds. Parents will forage for food and return to the young who will recognise them by their call. Galahs feed mainly on ripe seeds

which have fallen to the ground. They will pick your lawn of grass and weed seeds. When galahs are feeding there are always a few lookouts to screech a warning of danger.

The galah is a very successful bird which is found all over Australia. They are preyed upon by falcons and hawks whilst eggs and young ones are taken from the nest by goannas.

BAY DIAMOND BEETLE, *Chysolphus*

spectabilis This is the most common beetle that you are likely to see. Active and brightly coloured, the diamond beetle is likely to wander into view when you are looking at flowers, particularly wattles.



Adult beetles have a hard shell patterned with iridescent blue or emerald

green scales. Being a weevil it has a long "beak" with mouthparts at the end. The body is rough-textured and hard. The wings meet in a straight line down the centre of the back.

The larvae of the diamond beetle are legless and found in the bark and wood of wattles. It was one of the first insects to be collected in Australia by scientists on Captain Cook's expedition.

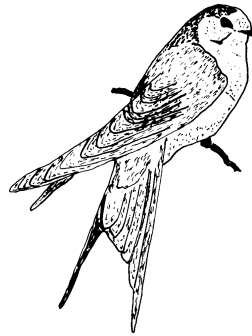
WELCOME SWALLOW,

Hirundo neoxena. Aboriginal name Millin.

These are the birds responsible for the mud nests on the walls of buildings, culverts and bridges. In Port Stephens they also nest on the navigation beacons.

Welcome swallows are fast, acrobatic fliers as they chase moths, flies and midges.

August 9th-16th.



Look for a small blue-black-brown bird with a forked tail. It returns to its old mud nest in the spring to breed.

TIGER ORCHID,

sulphur donkey orchid, double tails
Diuris sulphurea.

This family of ground orchids is almost wholly confined to Australia. Tiger orchids flower in the spring and die away in the summer.

The Nelson Bay area has four species of donkey orchid. They like to grow in open sunny areas like cleared fire trails.

Each year at this time a lone tiger orchid blooms on the highest point of Stephens Peak. The fire trails in the Hunter Water Catchment Area near the Polyclinic are good areas to view donkey orchids.

The bright yellow flowers are blotched with brown and are held on a slender stem, 50cm above the ground. Pollination is usually by native bee, and as only male bees have been observed, pseudocopulation is thought likely.

An edible tuber lies underground and was a favourite food with colonial children who knew them as 'boyams'.



August 17th-24th

- * Butcher birds are active.
- * Koala cubs leave the pouch and climb onto their mother's back.
- * Donkey orchids are in flower.
- * Mosquito wrigglers are abundant in pools of water.
- * Ducklings can be seen walking to water.
- * Reed warblers return from the north.
- * Pallid and bronze cuckoos call.
- * Cormorants begin nesting.
- * Potato orchid flowers open.
- * Greenhood orchids everywhere.
- * Quoll babies are grown up.
- * Fairy penguin eggs hatch on Broughton Island.
- * Wading birds arrive from Siberia (stints, curlews and sandpipers).
- * Flies overwinter as larvae or pupa in crevices.
- * *Rulingia hermannifolia* in flower along the National Park coastline.
- * Flying duck orchids appear.

EASTERN ROSELLA,

Platycercus eximius. Aboriginal name buroolit.

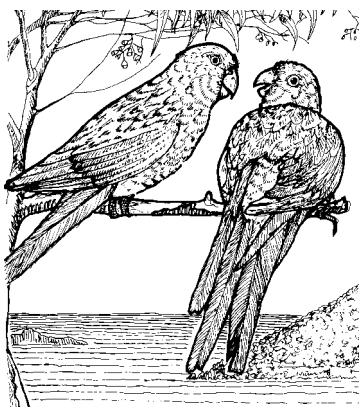
The bird on the tomato sauce bottle.

Cautious, alert and beautiful. One of the most common birds in this area. It is distinguished by the white patch around its throat. The female has a duller shade of red around the head and chest than the male.

From August on look for the courtship display. The male sits on the same branch as the female. The male drops his wings, squares his shoulders, fluffs up his breast feathers,

moves his fanned tail quickly from side to side and c h a t t e r s incessantly.

Get out on your verandah with your binoculars and scan the trees for hollows. You may see a rosella flying in and out.



The female alone incubates the eggs for twenty days. Thirty days after hatching the young leave the nest.

Occasionally an eastern rosella will nest in a tree stump, fence post or log on the ground. If so, this will give you an easy opportunity to watch the eggs turn into young birds. When you look down the tree hollow the nestlings will squawk at you. Only look in the nest when the mother has left to look for food. It is a big job for one bird to feed these 4 to 7 youngsters. Should a cat or an air rifle kill mum before the chicks leave the nest, all the nestlings will die.

The young can be distinguished by their duller appearance. Young birds will hang around their parents, who feed them by regurgitating into their beaks. It is an

odd sight to see a young eastern rosella standing on the edge of a seed tray not eating

but waiting to be fed by its

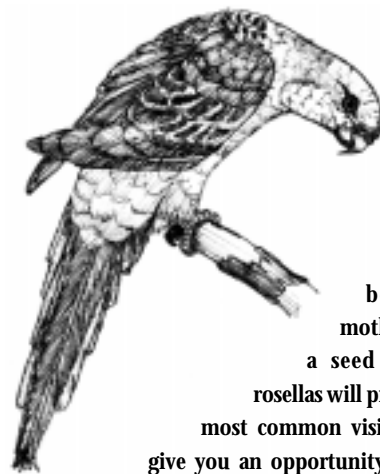
mother. If you have

a seed tray, eastern

rosellas will probably be your

most common visitor. This will

give you an opportunity to learn their various calls of alarm, keeping in touch and feeding.



GREENHOOD ORCHID, *Pterostylis*

nutans. During winter, thousands of these low, green orchids emerge from the ground, under trees. The plant itself is a clever and fascinating insect trap. This orchid

emits a scent to attract the mosquito-sized, male, fungus gnat. As the insect enters the flower it is thrown inside by the spring-loaded lip (labellum), which closes behind it. Escape is prevented



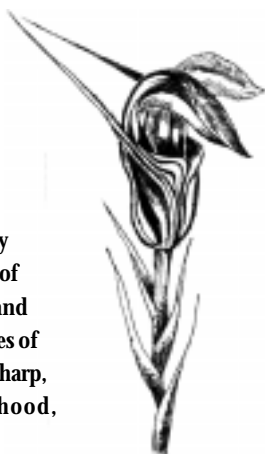


by hairs on the edge of the lip. Once inside, the insect feeds on an intoxicating nectar and looks for a way out. To do this the insect must pass through a sticky tube and then over the pollen, which adheres to it. Soon afterwards the labellum falls and the visitor is free to depart.

By this time the insect has become addicted to the nectar and flies off seeking more. Some groups of greenhoods target specific species of fungus gnat, and by doing so hedge against the possibility of pollen being delivered to the wrong flower.

When you find one, gently stroke the labellum and watch it spring up, which it should do unless there is an insect already inside. It takes about an hour for the lip to reset itself. They can be found on the edge of fire trails between July and October. We have many types of greenhood orchid including sharp, king, midget, maroonhood, nodding and cobra.

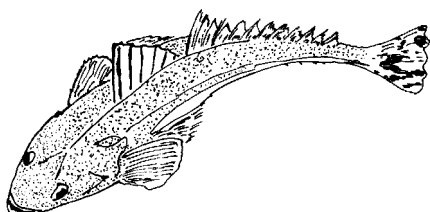
Each has an underground edible tuber.



FLATHEAD. Aboriginal name yuka . Wherever

there is sand the three main species of flathead (dusky, sand and tiger) can be found. From winter to spring, flathead are common off the beaches of Zenith, Box, Fingal, Wreck and One Mile. Flathead can be found up the rivers, right up to the first rapid.

Dusky flathead move down the rivers to spawn between January and March. Flathead lie on the sandy bottom, sometimes with only their eyes out, and wait for something to swim by. They change colour to suit their environment. Dusky flathead grow up to 10 kg.



August 17th-24th

PEREGRINE FALCON, *Falco peregrinus*.

It is time to climb Tomaree and look on the cliff side for the peregrine falcon. Capable of speeds of 300 km/h this deadly bird of prey strikes terror into other birds. It swoops on its prey from above and strikes out with its talons. You will need binoculars for a positive identification.



Look for a bird about 400mm long with a black head, back and upper wings and a light-coloured and horizontally-banded chest and underparts. Falcons fly fast, with rapid wing beats. The flight silhouette is characterised by long pointed wings and a medium to long narrow tail.

They nest about now on a ledge above Mrs. Murphys.



THE WATTLE IS A LADY

The wattle is a lady in a yellow satin gown
The gum tree is a gentleman with suit of green and brown
The Hakea is a cross-patch, and he'll scratch you if he can
The Cabbage Tree's a vain coquette, with every leaf a fan.

The Christmas Bells are tell-tales, for they whisper in the breeze,

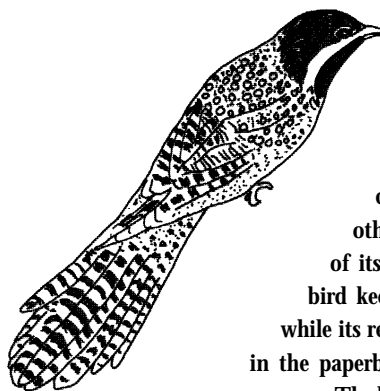
Tecoma's very lazy, for she sprawls and takes her ease;
Lambertia is a soldier, in his straight spiked coat of red;
Grevillea is an acrobat, see how his arms are spread!

A pale bride is Clematis, with her wreath of waxy white,
Hibbertia is a little girl, with face so round and bright,
Wild violet is a baby she, the sweetest ever seen,
And Waratah with crown of red is a tall and stately queen.
Amy E Mack.

August 25th-31st.

- * Gynea lily in full flower.
- * Spring has started.
- * Sawfly grubs cluster on eucalypt leaves.
- * Pixie cap orchid and greenhood orchid have reduced to just leaves on the ground.
- * Pink finger orchid in flower.
- * Yellow robins nest.
- * Skipper butterflies appear.
- * Milkmaids in flower.
- * Sugar glider twins are born.
- * Cuttlefish come close to shore to breed in the shallows.
- * Oystercatchers start to breed.
- * Red wattlebirds depart.

KOEL, *Eudynamis scolopacea* This large glossy black cuckoo with bright red eyes, after wintering in New Guinea, has just arrived in the Bay to breed. Their noisy coo-ee call can be heard day and night.



The female is looking for a Fig bird or oriole nest to lay its eggs in. The koel eggs hatch first and the chick ejects all other eggs and chicks of its host. The host bird keeps on feeding it while its real parents coo-ee in the paperbark swamps and mangroves. The koel is also known as the rainbird.

THE NIGHT SKY

The Pointers are two bright stars that "point" to the top of the Southern Cross. They can be used to find the South Celestial Pole. A perpendicular bisector of The Pointers intersects a line through the major axis of the

Southern Cross at the South Celestial pole (see the diagram).

Rigel Kentaurus (ri-jill-ken-to-rus) is Arabic for "foot of the Centaur". It is the brighter of the two pointers and the furthest from the Southern Cross. It is the star nearest to earth (4.3 light years), apart from the sun, and the third-brightest star in the sky after Sirius and Canopus.

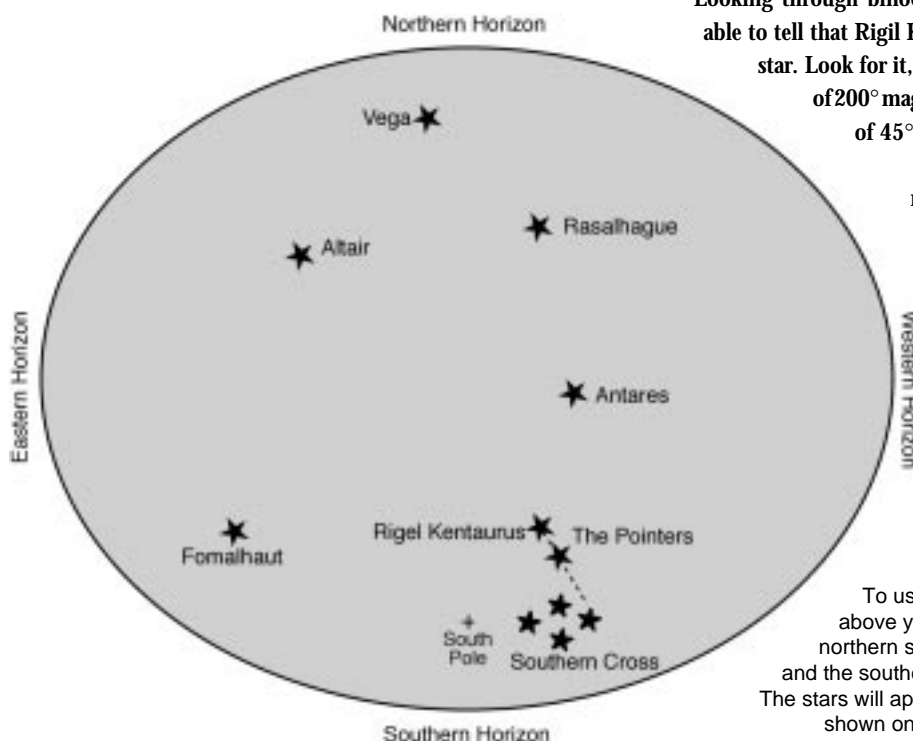
Looking through binoculars you should be able to tell that Rigel Kentaurus is a double star. Look for it, (them), on a bearing of 200° magnetic and an elevation of 45°.

Hadar (ha-dar) means "leg of the Centaur" and is the companion star to Rigel Kentaurus forming The Pointers.

The Night Sky

For the evening of August 25th, 8pm, Eastern Standard Time.

To use, hold this diagram above your head so that the northern side is pointing north and the southern side faces south. The stars will appear in the positions shown on the diagram.

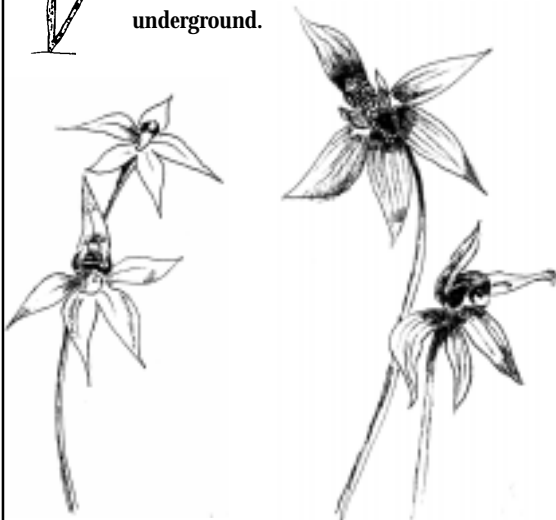


PINK FINGERS, *Caladenia carnea*.

The bright pink flower of this slender perennial herb is one that you will always see in the spring. They carpet the ground in colonies of thousands around the swamps beside Harbourside Haven, Shoal Bay. In other places like Morna Point they are relatively solitary.



This ground orchid has a single grasslike leaf arising from the base of the plant. Growing to a mere 20cm high, each group of 2-6 flowers is displayed at the end of a stark, slender stem. An edible tuber lies underground.



BRUSHTAIL POSSUM, *Trichosurus vulpecula*.

Aboriginal name Wottoo. August can be a tough time for the young brushtail possum, for up until now he (she?) has been able to ride on his mother's back and be protected by her.



Mother is now ready to raise another young. Males are competing for her favours and it

is time for the young to find a home and a territory, or perish. During dispersal males suffer such a high mortality that they only constitute a third of the adult population. Active only at night the brushtail spends the day in hollow logs, tree hollows, on the ground or in your roof.



At night they search out gum leaves, fruit, buds, bark and grass. They are themselves preyed upon by pythons, goannas, birds of prey, dingoes, cats,

August 25th-31st.



ACT Parks and Conservation Service

foxes and quolls. Breeding season is in April and again in September. At these times brushtails communicate with each other with hisses and coughs. The male has a scent gland on his chest and it is usual to see a reddish stain on his chest where he has been rubbing it on branches. Brushtails spend 4 months in the pouch and another month on their mothers back. They start to breed, themselves, at one year and live for about 10 years. Look for them in the trees at night on the Corlette Headland Walk.

Possum skins were in great demand by the Aborigines for rugs and cloaks. Twenty skins of the brushtail possum were needed to make a square rug of about 135cm each side. Possum fur was also used in making string and twine for nets, fishing lines, headbands and belts.



BOSSIAEA heterophylla has no

common name, although it could be called 'pea on a strap'. It is a bit of a curiosity in the world of pea plants being leafless. The flowers grow straight out of a flat, strap-like stem. The term *scolopendra* is Greek for millipede, which also describes the general appearance of the plant.

This *Bossiaea* grows about 80cm high and carries dozens of yellow pea flowers each with a dark red keel.



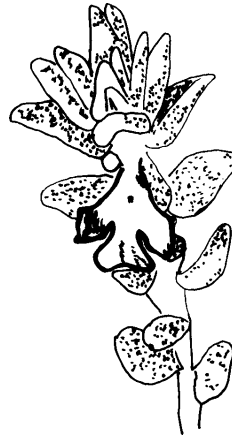
September 1st-8th.

- * The first flush of spring.
- * Reptiles can be seen basking in the sun.
- * September 1st is an alternative Wattle Day.
- * Magpies start dive-bombing.
- * Earthworms start their second main breeding period.
- * Whales are seen off the coast heading south.
- * Eastern spinebills can be seen on wildflowers.
- * Admiral butterflies about.
- * Sour currant bush carries lots of fruit.
- * Around September 7th, antechinus babies are born.
- * Young echidnas are weaned.
- * Swamp rats start to breed.
- * Forest clematis in flower.
- * Native iris in bloom.
- * Male red-bellied black snakes spend September looking for a mate.

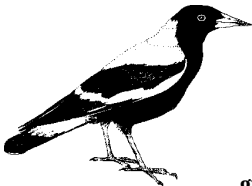
CLIFF MINTBUSH, *Prostanthera densa*.

Sometime between now and the end of the year this bushy shrub will come into flower. Its conservation status is "vulnerable" which means that through continued depletion, the survival of this species over the next 20-25 years in the wild is threatened and is at risk of disappearing altogether. There are patches of cliff mintbush on the western side of Kurrara Hill and around Pallinda Park on Gan Gan Hill.

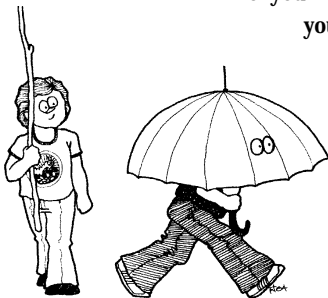
As a bushy shrub it grows to 1m high, and during spring large, delicate, mauve flowers appear. The leaves are heart shaped and hairy. Find out where this plant lives and do your best to protect it.



MAGPIE, *Gymnorhina hypoleuca*. September is magpie dive-bombing time. When there are eggs or young in the nest, male birds show great concern for their offspring. All intruders are attacked, including people who are seen as a threat.



The male magpie has a pure white patch on the back of his neck. The female has a greyer patch. It's a good idea to make friends with your resident magpies. As they strut around your yard looking for grubs, try offering them worms or meat. If magpies are swooping at you and clacking their beaks you can avoid the area, wear a hard hat or umbrella, put a big pair of eyes on the back of your hat or hold a stick above your head.



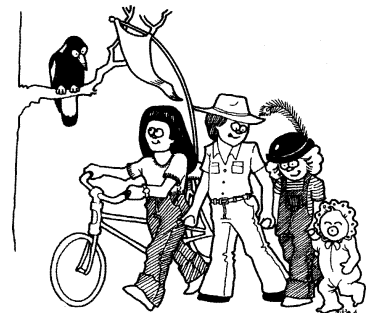
ACT Parks and Conservation Service

The carolling song is heard most often in the spring as the magpie advertises its territory. Magpies live in groups of about half a dozen. One dominant male

does most of the mating. Several females may lay eggs, but because so much energy is used defending the territory, many young are lost as the male usually only feeds one of the females. Cars are a particular danger to magpies and each group is lucky to have managed to raise one baby to adult stage in a year.

Magpies indulge in some fascinating and comical behaviour, wrestling, sunbathing, rubbing ants on themselves, and holding group meetings and corroborees. The magpie group has a territory of about 8 ha and individual birds may live for 15 years.

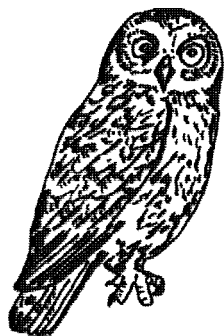
Magpies have the habit of using wire and other man-made objects for nesting material. All of the following have been found in magpie nests: rosary beads, heavy fencing wire, copper wire, plastic covered wire, bicycle brake cable, broken spectacle frames, pieces of plastic, chain, coat hangers and drink packs.



ACT Parks and Conservation Service

BOOBOOK OWL, *Ninox novaeseelandiae*.

Lying in bed on a winter's night you will probably hear the call of this owl. Known also as the mopoke its lonely and



persistent call may be to locate its mate. September to November, it, like many other birds, will bring up the next generation in a tree hollow. You might see it catching moths around a street light or being mobbed by noisy miners on its daytime roost. It's call is Australia's most characteristic night sound. Prey includes small mammals like the antechinus and the house mouse. The Corlette

Headland walk is a good place to look for them at night.

CHANNEL-BILLED CUCKOO, *Scythrops novaehollandiae*.

Born in Australia this bird spends spring here, arriving in late September, and leaves for New Guinea and Indonesia in autumn. The first thing to alert you that this cuckoo is around is the loud raucous cry which it emits almost continuously, as a juvenile, demanding food. It calls even when in flight, and at night.

The head and neck are pale grey. The belly and legs are white with faint bars. This is a large bird, with a head and body length of 600mm and a large bill 85mm long, like a hornbill. Eyes are red. It does what cuckoos do in the breeding season. It sneaks

in on another

bird's nest

when the

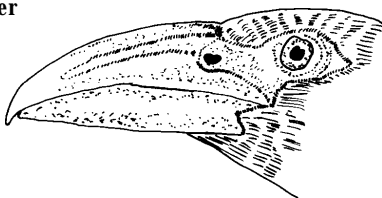
owner is

temporarily

away, quickly

lays an egg, and leaves

forever.



It lays its egg in the nest of a member of the crow family, particularly the pied currawong. As an adult it feeds on fruit, especially figs. As an infant it grows quickly on what its parasitised parent brings. In the case of the currawong that will be most of the nestlings of every bird unlucky enough to try and breed near a currawong's nest.

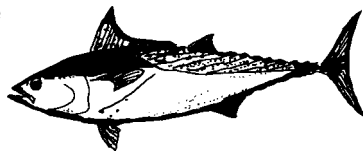
One great mystery is how does the developing bird, with its tiny brain and no suggestions from its real parent, know how to make its call, when to head north to New Guinea, how to navigate there and when to return to do the deed in the nest of next year's hapless crow?

September 1st-8th.

MACKEREL TUNA, *Euthynnus affinis*.

Looking across the water from Dutchmans Beach or Nelson Bay Harbour at this time of year, you may see birds diving and large fish breaking the surface in an action much like dolphins. The mackerel tuna have arrived. They will stay for about 3 weeks and some years they may not come at all. They are here to feed on the small fry in the estuary.

From Middle Island to Tomaree, schools of these fast and handsome fish will



methodically pillage the local stocks of small fish. You can chase the schools in a boat and get to within 5 metres of them working (cut the engine). They sometimes take a small shiny lure if it is moving fast enough. When hooked they will fight like gladiators. Once in the boat they will thrash their tail in the rapid beat of a flamenco dancer, change colour, vomit blood and fish, and die in utter rage.

Mackerel tuna are bright blue-black above, silvery white below and there are five round dark blotches on the belly between the ventral and pectoral fins. On top of the back there is an interesting mottled pattern. They are a sub-tropical fish and can be found as far south as Eden where they grow to 16kg.

GREEN AND GOLDEN BELL FROG, *Litoria aurea*.

On Broughton Island a colony of 1200 green and golden bell frogs are readying themselves for breeding. The males develop a dark coloured pad on their thumbs for gripping the females. When rain fills the rock pools, reproduction begins. The young tadpoles are predated upon by adult frogs and water skinks. Much of the colony lives just above the high tide mark. If storms cause waves to wash into the breeding pools then the tadpoles will die. Crabs move in to eat them. On

Broughton the

adult green

and

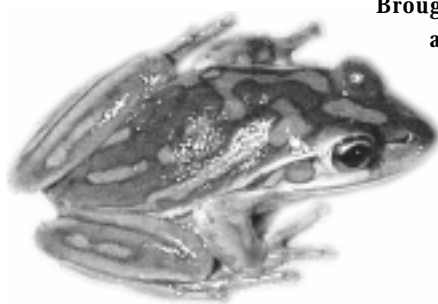
golden

bell

frogs

have no

predators.



September 9th-16th.

- * Orioles can be heard calling.
- * Scented sun orchids open their flowers.
- * The seas are alive with tuna.
- * Australian indigo in flower.
- * Willie wagtails nest.
- * Bats can be heard at night.
- * Mackerel tuna enter Port Stephens to eat schools of small fish.
- * Flying fox babies are attached to their mother.
- * Christmas beetles start banging against the windows at night.
- * Any satin bower birds that may have visited the area leave the coast to breed in the mountains.
- * Scallops spawn.
- * Red beard orchid in flower.
- * In 1992 at least 2 dugong visited Port Stephens for a few months.
- * Mopoke can be heard calling at night.
- * Wind tends to come from the north-east in the afternoon from now on.

BUSH RAT, *Rattus fuscipes*

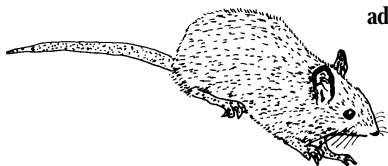
Don't turn your nose up at this nocturnal bundle of fur, it is not an introduced pest, but a fair dinkum Australian having been here for about a million years. Bush Rats like to dart about the ferns and dense undergrowth for insects, or mushrooms after a bushfire.

You may see their tracks in the sand, but, like the marsupial mice, the only hope of actually seeing one is by trapping. If conditions are good they can have several litters of 5 in a year.



Lots of bush rats don't make it through the winter, times are hard for them. So think of their big dark eyes and their small furry bodies doing it tough in their winter burrows as you sit round an open fire with your warm winter wool on.

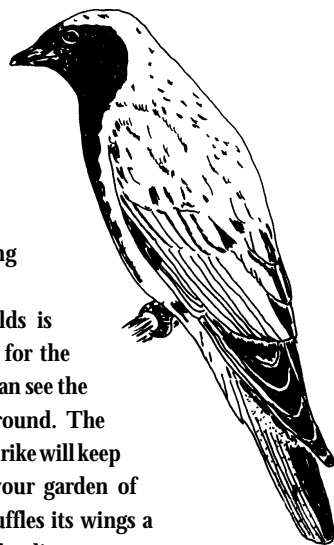
The bush rat looks very similar to the introduced black rat. The black rat has a tail length one and a half times as long as its body. The adult bush rat's tail is the same length as its body, 160mm.



BLACK-FACED CUCKOO SHRIKE,

Coracina novaehollandiae. Found all over Australia this grey bird with a black face pairs up with its mate in late winter, to raise its young in the spring. Before building a nest of sticks, bark and cobwebs, it will test the site out by squatting down and pretending to brood. Perhaps it's checking out the view.

The nest it builds is only just big enough for the job and strong wind can see the chicks blown to the ground. The black-faced cuckoo-shrike will keep itself busy, ridding your garden of insects. It always shuffles its wings a couple of times after landing.



TAWNY FROGMOUTH,

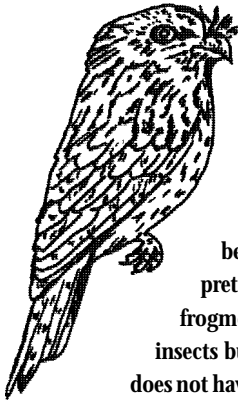
Podargus strigoides.

Your best chance of seeing this bird of prey is when possum spotting at night. By day they roost on a branch close to the trunk of a rough-barked tree.

Pretending to be a broken branch, they hold their "haughty" head high and fluff up their long facial bristles. At night frogmouths perch near open ground looking for movement.

The pine trees in the grounds of





Tomaree Lodge are a good place to see them. Foxes come here also to snack on the night life.

Frogmouths make a nest of sticks in a tree and by Christmas the whole family may be seen lined up on one branch pretending not to be there. The tawny frogmouth has a huge gape for catching insects but its bite is surprisingly soft. It does not have the strong talons of an owl. Its main enemies are cats and cars.

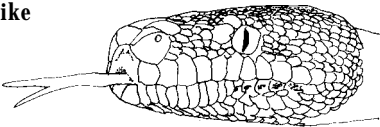
DIAMOND PYTHON, *Morelia spilota*.

Aboriginal name doongit. This is a non venomous snake that eats rabbits, mice, rats and any small mammal up to the size of a young wallaby. A python will seize its prey using its teeth, then throw loops around the doomed creature which is suffocated.



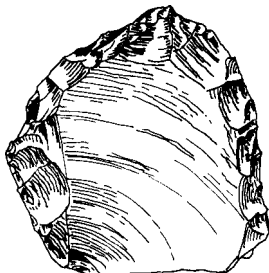
The snake's jaws can be unhinged to allow it to swallow a large bony meal. Being relatively inactive it does not have to eat very often. The diamond python averages about 2 metres in length but can grow to 4 metres. Mainly nocturnal, these slow-moving reptiles spend the day sleeping coiled up in the branches of a tree, in tree hollows, rock crevices or a rabbit's burrow.

Pythons lay soft-shelled eggs and, unlike most other snakes, guard them for the 2 months they take to hatch. Whilst small they can be preyed upon by other snakes, lizards and birds. By the time they are adult size they are too powerful for most animals to attack. They have been seen in every part of our bushland.



STONE SCRAPER. A relic of Aboriginal culture, often found in shell middens.

It is usually made of chert and was used for cutting and scraping.



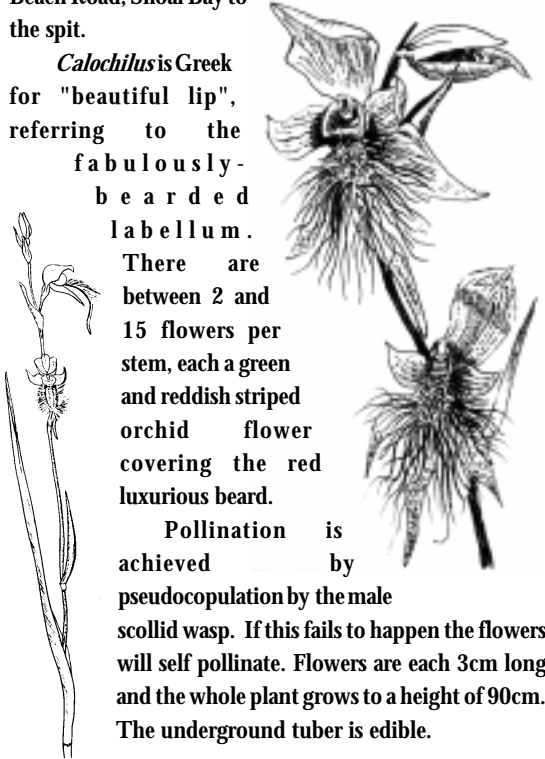
September 9th-16th.

RED BEARD ORCHID, beardies, *Calochilus paludosus*. One of the great surprises in the bush. Surviving as an underground tuber all year this terrestrial orchid flowers about now. Preferring sunny open areas, such as beside fire trails, it can be seen on the track leading from Ocean Beach Road, Shoal Bay to the spit.

Calochilus is Greek for "beautiful lip", referring to the fabulously bearded labellum.

There are between 2 and 15 flowers per stem, each a green and reddish striped orchid flower covering the red luxurious beard.

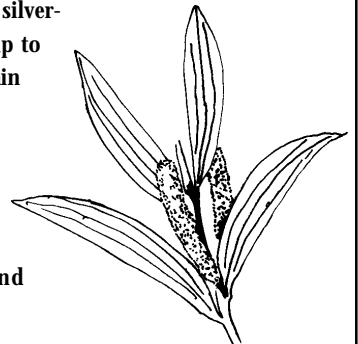
Pollination is achieved by pseudocopulation by the male scollid wasp. If this fails to happen the flowers will self pollinate. Flowers are each 3cm long and the whole plant grows to a height of 90cm. The underground tuber is edible.



COAST MYALL, *Acacia binervia*,

Aboriginal name kaarreewan, but-tig-yeo. This tree is particularly common on Tomaree Headland. It is instantly recognisable by its silvery blue-grey foliage and dark, fibrous, fissured bark. Right now it is coming into flower, bright yellow spikes 4cm long, held close to the branches.

The leaves are silver-grey, sickle-shaped, up to 15cm long, with 3 main veins and covered in minute hairs. The timber is fragrant being particularly suitable for wooden smoking pipes and boomerangs.



September 17th-24th.

- * Millipedes wander into houses.
- * Cuckoo shrikes feed on caterpillars.
- * Whiting school in Port Stephens.
- * Eastern rosella chicks born a year ago have moulted and show their adult plumage for the first time.
- * Some bandicoots start their second litter.
- * Emerald moths on house windows.
- * Channel-billed cuckoos arrive from New Guinea to breed.
- * For the next two months immature magpies demand food in the trees.
- * Every third year young eels travel upstream.
- * Tiger moths seen flying about.
- * Bar-tailed godwits arrive from the northern hemisphere.
- * Christmas bush puts on tiny buds in preparation for flowering.
- * First vanilla plants come into flower.
- * Black wattle in flower.
- * Pipis spawn.
- * Native cherry in fruit.

CONE SEED, smoke bush, *Conospermum taxifolium*.

This slender shrub growing to 1.5 metres high, flowers in the spring.



A hundred or more small white flowers cluster in a cone-shaped mass at the highest point on the stem. Each flower is a white tube with three finger-like "petals" fringing one side.

These flowers have an unusual method of pollination. When a bee inserts its proboscis to sup on the nectar, the sensitive anthers "explode", throwing pollen on the insect. These anthers were holding up the style which now springs down. Future visitors to that flower will have to push under the style to reach the nectar.

Conospermum is Latin for "cone-seed", referring to the fruit, a tiny inverted cone, with a fringe of soft hairs, containing one seed.

The flat straight leaves are variable 1-3cm long.



MILLIPEDES

If you go hunting in the garden on a cool night, with a heavy dew, you are likely to discover the millipede scurrying about.

Millipedes are cylindrical, glossy and curl up like a watch spring. They are vegetarian, have two pairs of legs per body segment and no tail. (Centipedes are carnivorous and have 1 pair of legs per segment).

Many of the body segments possess pairs of repugnatorial glands which produce hydrocyanide, formic acid and other irritants, which the creature uses in defence if disturbed. Harmless to people, they can be a pest in the garden if they dine on your ornamental plants and vegetables.



BOGONG MOTH, *Agrotis infusa*.

Occasionally these moths occur in huge numbers and descend upon cities and towns. In these circumstances there are probably just too many of them and they get lost. Westerly winds can push them off course and into coastal areas.

Bogong moths start life as cutworms, feasting on the winter pastures of inland NSW and Queensland. In their billions they decide to spend the summer in the high country of the Australian Alps. On their way they pause to rest on buildings and houses.

They are sustained by food reserves in their body although they will snack on flowering trees and plants.

On arriving at elevations above 1500 metres in November, they fill up the rock crevices in huge clusters, covering the granite boulders like tiles on a roof, each individual has its head tucked under the moth in front.

The Aborigines roasted them on heated rocks. Bogong moths were also ground into a paste and taken back to the women, children and old people who were not up to the arduous journey into the highlands.

The moths stay in the Alps until April when they mate and fly back to the pasture areas, where they were hatched. After laying their eggs, all the adults die.



MUTTONBIRD, *Puffinus tenuirostris*.

Since they were here last year, muttonbirds (short tailed shearwater) have flown to New Zealand, the North Pacific, Japan and the Arctic Seas. Each year 23 million birds circumnavigate the Pacific in their annual migration of 30,000 km. They have a wing span of one metre and can fly up to 40 knots. If the exhausted birds arrive during a food shortage, their depleted bodies can be seen in large numbers washed up on the beaches.

Birds have numerous adaptations to save weight and as male muttonbirds approach Australia their testes swell up. After mating these same organs shrink over the



following few weeks, so that if anything happens to the egg, the pair cannot fertilize another.

In the last week in September muttonbirds meet on Broughton Island and other islands south to Tasmania. They locate their mate from last year, find their old burrow, and mate. They then leave the burrow for 3 weeks to put on fat for egg-laying and incubation.

The male undertakes the first incubation, of a single egg, for 13 days. Then the female takes over for a similarly long spell. The birds only come ashore after dark and if they arrive early they will raft-up around the island. Fisherman know this bird well and it can be a race to get your bait to the bottom before the muttonbirds dive and intercept it. They can dive to 50 metres. Separating a muttonbird from your line and hook is a messy business.

Half the chicks will die in the first year and the rest will not breed until they are 5 years old. They can continue breeding for more than 35 years. Most eggs are laid on the 25th November.



September 17th-24th.

The best way to see muttonbirds is to camp on Broughton Island. All night the birds fly silently and low to their underground nests. Chicks in the nest make a lot of noise and often sound like babies crying.

Lots of muttonbirds are taken by sharks, their chicks will then die of hunger. The chicks are fed on krill and squid, regurgitated by one of the parents. To save weight on long feeding flights the catch is reduced to oil.

The muttonbird diet consists of small fish (25%), squid and cuttlefish (35%) and krill (40%).

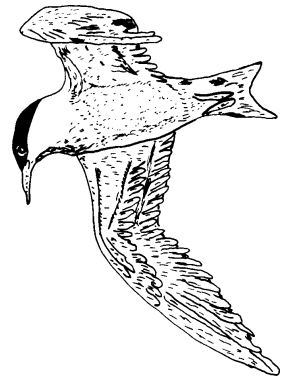
CRESTED TERN, *Sterna bergii*.

The sight of these birds feeding at sea is a sign for fishermen that a school of small fish, like pilchards, are present. Not far away will be tailor, tuna or marlin.



A white and grey bird with a black crest and long yellow beak, the tern will dive for surface fish. At night they come ashore to roost.

Breeding is in September at any place on the sand among the pig-face where it feels safe.



SNOW WREATH, *woollsia, Woolsia pungens*. One of the relatively few local wildflowers to exude a fragrant perfume.

The plant grows to about a metre in height with the stem being covered with crowded, sharp leaves.

Amongst the leaves are the flowers which are a white, purplish, pink or coconut ice in colour. Each of the numerous five petalled crowded flowers is about 1cm across, on a longer tube.

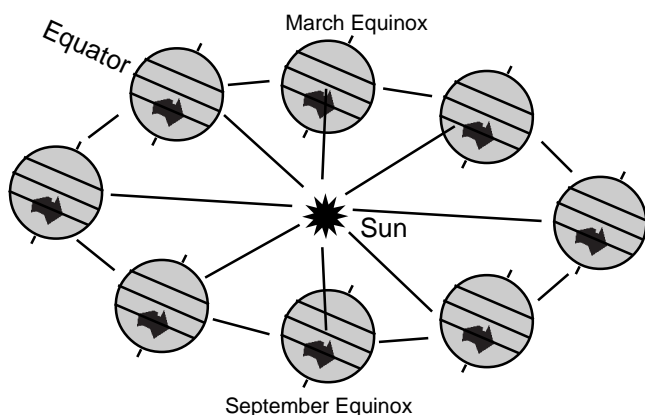


September 25th-30th.

- * Humpback whales still pass heading south to Antarctica.
- * Muttonbirds arrive from the north to breed on Broughton Island.
- * Feral cats have the first of two litters, 2-7 young.
- * Five corners is fruiting.
- * Swampheens have their young.
- * Antechinus young become too large to carry in the pouch and are left in the nest.
- * Tailor that were here earlier in the year have arrived at Fraser Island to lay their eggs over sand.
- * Pythons lay their eggs.
- * Cranberry heath in fruit.
- * Sallow wattles have wasp galls.
- * Pippis spawn.
- * Pine heath in fruit.
- * Coast myall in flower.
- * Stringybark in flower.

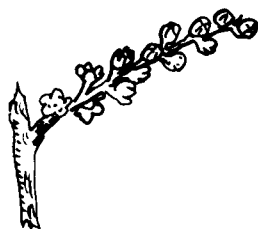
SPRING EQUINOX occurs around the 22nd September. Also called the *vernal equinox*, it marks the start of spring. The term equinox comes from a Latin word meaning "equal night". Another equinox occurs on March 21st. The equinoxes are the two days of the year when the sun is directly over the equator. At these times the days and nights are of equal length.

Spring Equinox



SOUR CURRENT BUSH, acid drops, *Leptomeria acida*.

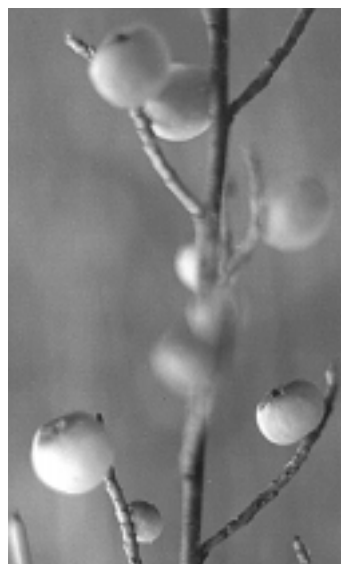
The branches of this parasitic plant are long, whippy and broom-like. The absence of leaves is an indication that this plant gets nourishment from an outside source. In fact, it is a parasite on the roots of the nearest tree.



It flowers and fruits from late winter to late spring. The tiny flowers are white, tending to yellowish or red and are held close to the thin green branches.



These flowers will eventually turn into a green-to-reddish-brown spherical fruit, 5mm in diameter. These fruits are edible, and plentiful, the average tree having hundreds of them. They can be eaten raw, tasting best after they have turned from green to reddish. They have the same vitamin C content as an orange and can be made into a drink, jelly or jam.



THE NIGHT SKY

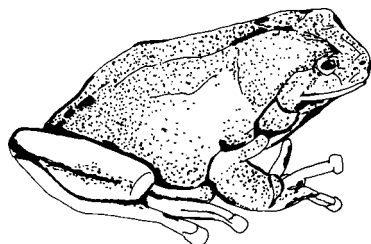
Altair (al-tar) is Arabic for "flying vulture" and is a bright star in the constellation *Aquila*, the eagle. Altair has two guide stars, one on each side. Altair, Deneb and Vega make a bright right triangle that spans the Milky Way. On the evening of the 25th September at 8pm EST Altair can be found on a compass bearing of 336° and an elevation 48°.

Rasalhague (ras-al-hague) is Arabic for "head of the serpent charmer". It can be seen on a magnetic bearing of 300° and an elevation of 30°.

GREEN TREE FROG, *Litoria caerulea*.

Rather than up a tree, you are more likely to find this reptile in your letterbox, downpipe, vase or toilet bowl. It makes an easy pet and doesn't mind being handled.

This widely distributed frog can live for more than 20 years. Under those flaps on the side of the frog are glands that secrete *caerulein*, a thick creamy liquid useful in treating hypertension.



The green tree frog's call is a continuous low pitched croak. Frogs are very sensitive to atmospheric changes and their croaking is supposed to

precede rain.

Green tree frogs eat insects which they catch by flicking out their long sticky tongue, and flicking it back into their mouth. Their food is not chewed, as like most frogs, they have no teeth. The green tree frog is capable of eating mice. Around the home it will be preyed upon by cats and in the wild by snakes and water birds.

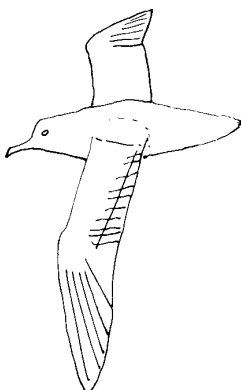
This is our biggest local frog, growing to 12cm in length. Whilst needing water to lay its eggs in, the Green tree frog is happy to live away from permanent water. The warmth and wetness of spring is signal enough for this and other frogs to leave their pot plants and move to water for spawning. Tree frogs have enlarged pads on their toes which secrete an adhesive to help them climb.

SOOTY SHEARWATER,

Puffinus griseus, breeds September to April on Broughton, Little Broughton, Cabbage Tree and Boondelbah Islands.

The sooty shearwater has a winter trans-equatorial migration to Japanese and Californian waters. Migrants pass by, travelling north in April-May and returning again in August-September.

A fairly common oceanic bird it lives on squid, crustaceans, fish, molluscs and jellyfish.

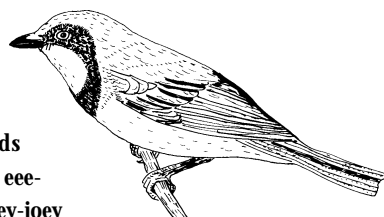


September 25th-30th.

RUFIOUS WHISTLER,

Pachycephala rufiventris. During September look for a cup-shaped nest of fine twigs and grasses on a bush close to the ground.

The song of this bird, which it keeps up for a full minute, sounds something like eee-chong or joey-joe-joe and is a sure sign that spring is here.



Look for a small bird with a black-edged white throat and a brownish red breast and belly. In the autumn it usually moves north on a nomadic route, chasing the insects it lives on.

GIANT WEDGE PEA,

golden glory pea, *Gompholobium latifolium*.

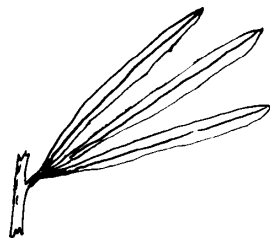
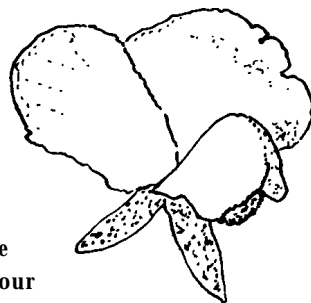
This erect shrub grows to 3 metres high and is common between Boulder Bay and Fingal Bay.

The lemon-yellow pea flowers are relatively huge at 30mm across and have a densely fringed "furry" keel.

Even in the spring when our wildflowers put on their best show this particular flower is designed to be noticed.

Leaves are in groups of 3 on a short stalk. Each leaf is 4mm wide, 50mm long and paler below. The pod is 15mm long, hairless and swollen.

This is our biggest, most dazzling pea.



October 1st-8th.

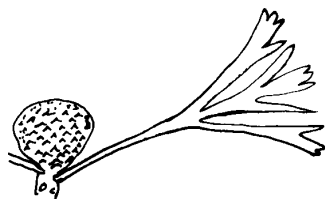
- * *Melaleuca groveana* is in flower on Stephens Peak.
- * Sugar gliders leave the pouch to spend a further month in the nest.
- * Fisheries inspectors decide when to open the prawn season, which will run from now until April.
- * Love creeper is in flower.
- * Fox cubs emerge from the den and begin hunting.
- * Mud crabs and blue swimmer crabs are mating.
- * Mistletoe berries are abundant.
- * October long week-end is the start of the trout fishing season.
- * Kookaburras tunnel into termite nests in trees for nesting hollows.
- * October to November is the peak mating time for koalas.
- * Kookaburras look for a mate.
- * Many birds move south to nest.
- * Black wattle comes into bloom.
- * Forest clematis comes into flower.
- * Blueberry ash berries begin to fall.

DRUMSTICKS, *Isopogon anemonifolius*. This plant gets its name from the lemon-yellow flower which resembles fifty or more drumsticks thrust into a pincushion,

the whole being 40mm across.

After flowering a woody spherical cone develops which stays on the shrub for years. When the plant dies or is burnt, the cone breaks up and the fluffy seeds fly away.

The leaves are different from other plants being much divided (forked).



PHEASANT COUCAL, *Centropus*

phasianinus. While driving on a road passing a swamp or wet area you may notice a large black-and-brown bird with a long tail run out of the way. This is the pheasant coucal. It is more likely to be heard than seen. Its call is a deep hollow 'coop coop coop coop.....'. Slow at first, accelerating and descending like liquid glugging from a bottle.

It can often be heard in the Fly Point Flora Reserve. The bird is so clumsy it is almost flightless. October is a good time to listen for its call. It breeds over the summer months.



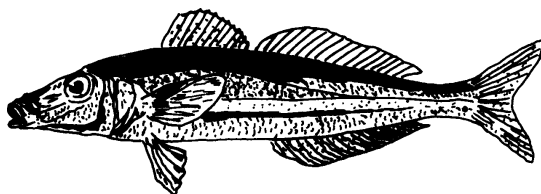
If you manage to find a nest in thick grass and reeds you may be surprised at the sight of the newly hatched chicks. They are black and covered with coarse white threads, black eyes and a big gaping orange mouth and tongue. This bird's call is one of the great sounds of the Australian bush.

WHITING, *Sillago* species.

Next time you are on one of our estuarine beaches put on a pair of goggles and look at the whiting. They move along the beach, patrolling back and forth, possibly hoping that your feet will dislodge something tasty.

When everyone has gone home from say Nelson Bay Beach or Dutchies Beach, go down with a light rod and line and catch these whiting. A good bait would be peeled prawns, yabby, pipis or best of all beach worms. Whiting put up a terrific fight, swimming hard and leaping. Whiting are muscular, athletic, good looking and good eating. The coincidence of sunset, high tide and the end of a long lazy day is the best time to catch them.

Any licensed fishing boats you see at this time of year left on the beach will probably be netting whiting at night.



PAINTED CUP MOTH, *Doratifera osleyi*.

Most moths fly at night so it is unlikely that you will see this one or its close relative the mottled cup moth, *Doratifera vulnerans*.

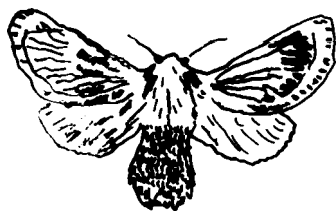
By day this moth lies still on a tree using its camouflage to avoid being eaten.

It is in the caterpillar form that this moth is at its most striking. These larvae are coloured red, yellow and black. Their caterpillar bodies are covered with whorls of retractable stinging spines. The tufts of stinging spines usually lie flat and are erected in an emergency. The sting is about the same as that of a stinging nettle. To see the stinging spines, brush something up against the caterpillar. There are 8 bundles of these spines teamed up with an irritant fluid.

These caterpillars are also known as Chinese junks. They eat so many leaves, especially on gum trees, that they may defoliate the tree.

The larvae pupate in brown cup-shaped cocoons which look like gum nuts.

This is enough to make it unattractive as food to birds, and a deterrent to the parasitic wasp which often lays its eggs inside the caterpillar's body. Often the parasitic wasp is successful and a wasp, not a moth emerges from the cocoon. If the "gumnut" cocoon has a hole in the side it is a sign that a wasp has emerged. Moths emerge from the top.



GOANNA, lace monitor, *Varanus varius*

Occasionally when wandering through the bush you will disturb this lizard. It will race up a tree to "hide" on the other side of the trunk.

Up a tree is where the goanna is happiest, searching nests and tree hollows for bird's eggs and young birds. It will also snack on reptiles, small mammals, insects and carrion.

When surprised in the open, and feeling threatened it will rear up on its hind legs and hiss loudly. The goanna lays



October 1st-8th.

its soft eggs, up to 12,

in a burrow or

excavates a hole in a

termite's nest. The

emerging young are

brightly coloured with

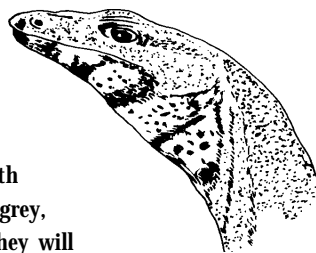
alternating bands of grey,

cream and yellow. They will

eventually grow to two metres in

length. Around Christmas time goannas can be seen nipping freshly-emerged cicadas off tree trunks.

They are the only Australian lizard to have a forked tongue. If you are quick enough to catch one, you may be rewarded with deep wounds from its claws and teeth. Goanna claws are sharp and strong, and the teeth are backwardly curved, long and numerous.



BLACK-EYED SUSAN, *Tetradlea*

ericifolia. September and October are the peak times to find this plant in flower, although it is often out for most of the year. A very common species you will see it in every

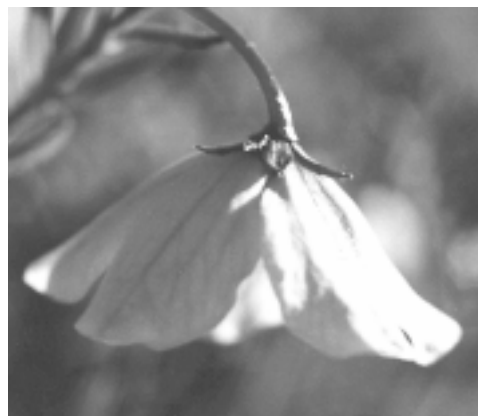
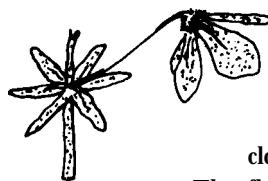
patch of bushland on the Tomaree Peninsula.

There is a rare leafless variety on Gan Gan Hill.

Black-eyed Susan grows close to the ground, 50cm tall.

The flowers are usually pink or anywhere between rose and purple. Each flower has a black or dark brown centre. You will have to flip the flower over to see this as it always hangs downward, as if to shed the rain. I like to think of Susan as bashful, she keeps her eyes to the ground.

The leaves are alternate or in whorls of 3-6.



October 9th-16th.

- * Bluebells are everywhere.
- * Sundews and bladderworts are flowering.
- * The Southern Cross is low on the horizon in the evening.
- * Currawongs are nesting.
- * The first trigger plants begin to flower.
- * Sawfly wasp larvae go to ground.
- * Flannel flowers start to dominate the bush.
- * Exhausted muttonbirds are washed up on our beaches.
- * Yellow donkey orchid and coast tea tree come into flower.
- * Yellow and black hover flies swarm in the shade on hot days.
- * Some of our local bats give birth.
- * The best month of the year for bird-watching.
- * Young (grey) magpies are being fed by their parents.
- * Bogong moths are frequent visitors.

SWAMP RAT, *Rattus lutreolus*.

This native animal can be found anywhere in the Nelson Bay area and is not confined to swampy areas as the name might imply.

Looking something similar to the bush and black rats, it can be distinguished by its tail which is shorter than its body length. (The bush rat's tail is the same length as its body and the black rat's tail is 1 1/2 times the head and body length.).



The swamp rat's fur has a woolly appearance and the ears are short and rounded. Body length is 160mm and tail length 110mm.

The coat is grey to grey-brown above and paler

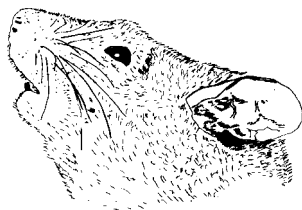
below. The tail is grey, scaly and sparsely haired.

The swamp rat often moves about in daylight although it is mainly nocturnal. The nest of shredded vegetation is at the end of a short burrow amongst the tussocks or rotting logs. Here the litter of 3-5 young are born after 3 weeks gestation sometime between September and May.

These tiny (6g) naked young grow to independence in only 3-4 weeks. Aged 3 months, they also can start breeding whilst their mother continues to have more litters during the warm half of the year. Home range is 0.2ha and their diet is grasses and sedges with the occasional insect during winter. The life-span is about 18 months.

Females will defend their home range from other females whilst the males are free to roam over the territory of adjacent females in the breeding season. The swamp rat is considered a native animal. It is not endangered but its long-term survival depends on its habitat remaining undisturbed. It needs dense ground cover which makes it vulnerable to clearing, grazing and fire.

Swamp rats have been found at Snapper Point, the Corlette water tank and Wanda Avenue.

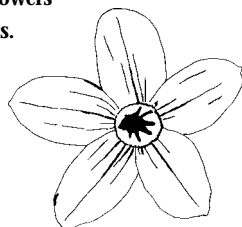
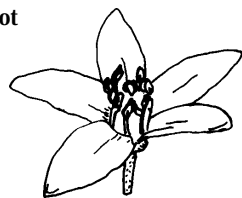


WAX FLOWER, *Eriostemon australasius*. The

spring blooming of the wax flower is one of the great floral displays to be enjoyed in this area. If the mass of pink blooms does not attract your attention the hum of hundreds of bees probably will.

The plant grows to 1.5m high and is able to thrive in poor soils due to its mycorrhizal associations, which supply the plant with extra nutrients. The large pink flowers have five petals and ten stamens.

The leaves are thick, lance-shaped, grey-green, flat and covered with small warty oil glands filled with volatile oils.



GYMEA LILY, giant lily, *Doryanthes excelsa*.

Aboriginal name pooloongearn.

This colossal leafy herb comes into flower twice each year. Half the gynea lilies flower in the autumn, and the other half of the population in the spring.

The dense cluster of red flowers you see now, started forming five months ago. First the flowering stalk appears amongst the leafy base. When this stalk is half a metre high it can be snapped off and eaten. It is not very palatable raw, but after one and a half hours in the ashes of a fire it has the flavour and texture of a slightly bitter sweet potato.

The flowering stalk takes months to grow and strengthen before finally reaching its full height of up to 5 metres. A cluster of a dozen or more red flowers develops at the top of the flowering spike.

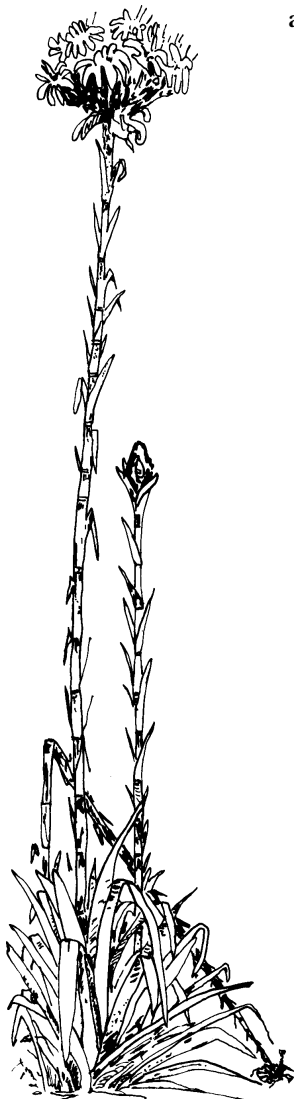
Each flower is 10cm long having in its base a pool of nectar one centimetre across and one centimetre deep.

Bees, birds and animals visit the flowers to partake of the windfall.

Now is the time to visit the top of Gan Gan Hill (once called Lily Hill after this plant), or drive past Gan Gan Army Camp to enjoy the fantastic abundance of the giant lily.

In time the flowering spike dries out and eventually falls over. Aborigines used these flowering spikes as spear shafts. They also cooked and ate the roots, which were made into a cake and eaten cold.

The leaves are broad, shiny, smooth, sword-like and 1.5m long. They contain a strong fibre which can be made into rope.



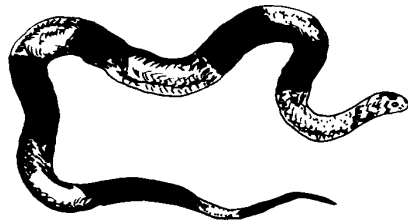
October 9th-16th.

RED-BELLIED BLACK SNAKE,

Pseudechis porphyriacus. Aboriginal name muttoo.

Our most commonly-encountered snake. Up to 2.5 metres long, it is shiny black above, belly red and the underside of the tail is black. It prefers creeks and damp areas and is active during the day.

If surprised it will immediately slide away, or, if



inclined it will flatten its head and neck, hiss, threaten and then retreat. Whilst some deaths have occurred, a bite usually only produces illness in adults. The venom can cause paralysis, disturb blood clotting and attack the muscles of the body.

The young are born in a thin-walled sac from which they emerge in a few minutes to an hour. There are usually between 8 and 40 per litter. Also known as black snakes, they feed on frogs, fish, lizards, snakes, rats, mice and birds. When you hear the croak of frogs you can be sure that the red bellied black snake is there also. They are plentiful in the swamp behind Harbourside Haven.

Mating occurs during spring and combat between males can sometimes be observed. This consists of the two opponents intertwining their bodies with each attempting to get its head higher than the other.

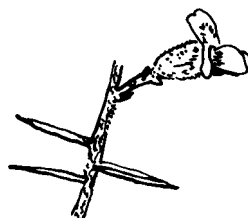
Averaging 1.2 metres in length and full of venom this is a snake to be avoided. This is not difficult as they are as scared of us as we are of them.

PRICKLY PARROT PEA,

Dillwynia juniperina. This pea distinguishes itself by having stiff, pointed leaves 1cm long. This prickly characteristic helps separate it from the dozens of other similar-looking pea flowers that this area is blessed with.

The small yellow and red pea flowers are clustered at the ends of the branches.

The whole plant grows to about one and a half metres high.



October 17th-24th.

- * Flying foxes are looking for figs and *Angophoras*.
- * Snakes and skinks are active.
- * Cicadas emerge from underground and leave their pupa cases on tree trunks.
- * *Angophera costata* is in flower.
- * Female snakes leave a scent trail so that the males can find them.
- * Fairy penguin fledgelings go to sea to hunt for themselves.
- * Skeletonizer moth larvae attack gum leaves.
- * Woody pear in flower.
- * Flying ants swarm on a warm humid night.
- * Time to collect seeds from the wonga wonga vine, dusky coral pea and wattles.
- * 24-10-96 a sperm whale washed up on Stockton Beach.
- * Baby noisy miners call from the trees.



its head up, feet down and wings back.

The labellum is shaped like a duck's bill. Pollination is affected by a male saw-fly which lands on this "beak" to copulate with it. The weight of the insect causes the spring loaded labellum to snap downwards, trapping it in the pouch-like base of the flower. In the struggle to escape the saw-fly deposits any pollen it may be carrying and is released, freshly laden to repeat the process with another flower. The labellum eventually resets itself.

The Flying Duck orchid can be found in sunny open areas, especially on the edge of fire-trails.

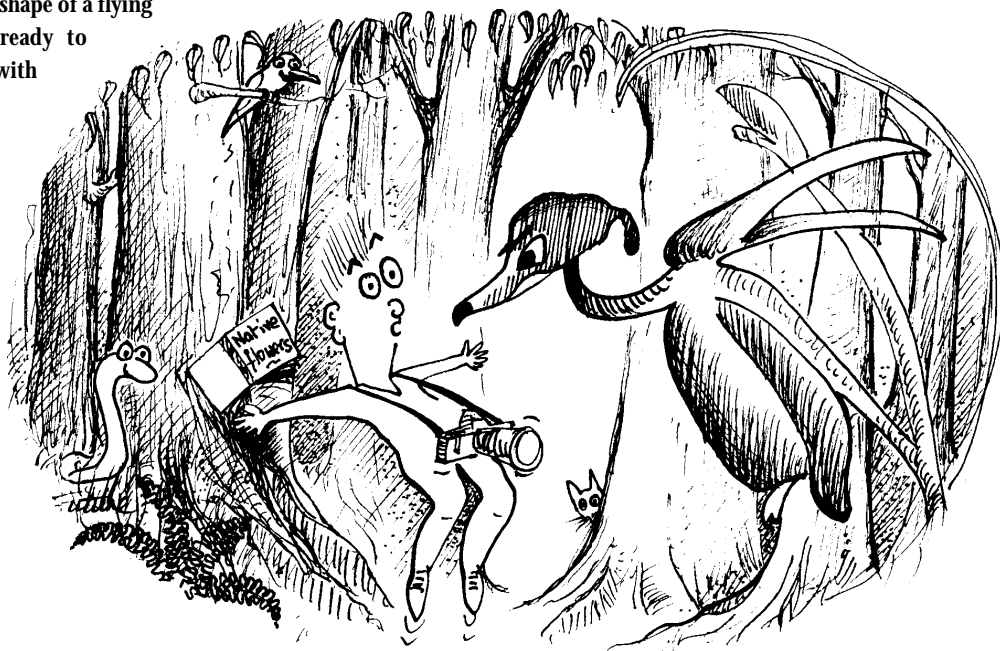
An edible tuber lies underground.

FLYING DUCK ORCHID

Caleana major.

This small orchid is one of the big surprises of the bush. A slender plant growing to 60cm tall it is easily overlooked. Being generally green and brown it blends well with the background.

The red-brown flower is in the shape of a flying duck ready to land with



GREY HEADED FRUIT BAT, *Pteropus*

poliocephalus. Aboriginal name *gundenwi*.

This bat is dark brown all over except for a grey head and a reddish-yellow collar. Fruit bats or “flying foxes” spend the day in “camps”, which may number hundreds of individuals. The Salamander wetlands have been used as a camp for decades. Camps are usually in forests or mangroves. These are not echo locating bats, they navigate by sight, and food is located by smell. These biggest bats in the world prefer to eat the blossoms and nectar of eucalypts and native fruits, but will raid an orchid if their natural food is scarce. With fruit, the pulp is crushed and only the juices are swallowed.

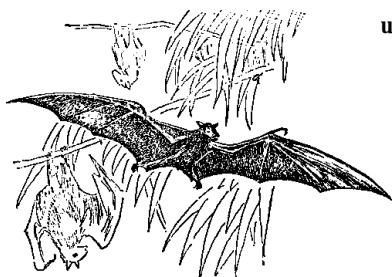
Listen for them chattering in your garden trees at night. Look with your binoculars to see if any newborn young are clinging to their mother as she goes about feeding. There are more than 22 different calls used in communication, each one prompting a different behavioural response.

In spring and autumn when the full moon is rising at sundown, bats can be seen silhouetted, wheeling and turning, taking early samples and getting their bearings for a nights feeding.

Bats are the only mammals that can fly. Some species live as long as 30 years, producing one young each year. Fruit bats can also swim and crawl. A large specimen can weigh 1 kg and have a wing span of 1.6 metres.

After mating in March females form camps in October. After the birth, their single young is carried in the “armpit” for about 2 months. After that time juveniles are left in the camp whilst their mother is out feeding. This is the time

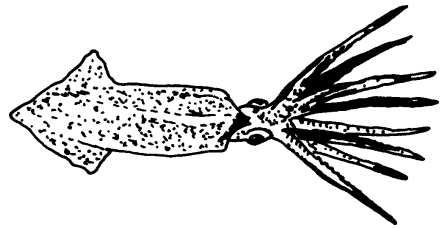
they are preyed upon by gulls, eagles, goannas, and carpet snakes. Fruit bats help pollinate plants and disperse seeds.



October 17th-24th.

SQUID, the preferred food of sperm whales, are now popular as calamari.

Squid propel themselves through the water by producing a water jet. They can change colour and disappear in a cloud of black ink. Squid can be lured to the surface with a strong light at night to be taken with a spear, or netted. You can also use a squid jig, a torpedo shaped lure covered with many sharp, barbless hooks. Many jigs are either fluorescent or have a battery-operated light to attract the squid. A similar-looking creature is the cuttlefish which has a pithy backbone, which you can find washed up



on any beach and is good for your budgie's beak.

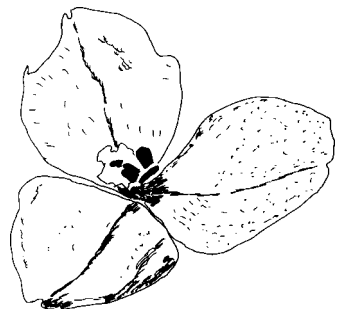
Squid are easily caught by spinning or trolling a squid jig on a calm night in sheltered bays. The old gamefish wharf in Shoal Bay and the jetty in front of the Salamander Hotel are popular spots for squidding.

The backbone of the squid looks like a transparent quill feather, and it is thus possible to get both pen and ink from the squid.

NATIVE IRIS, leafy purple flag, *Patersonia glabrata*. The flowers of this grass-like herb are a bright purple-blue, having three large petals, the whole being 50mm across.

A delicate flower, the petals wilt in the heat of the day, and any picked flower will wither almost straight away.

The tough grass-like leaves are narrow, 2mm wide and 200mm long. The plant can grow much taller than this when competing for sunlight with surrounding dense ground cover.



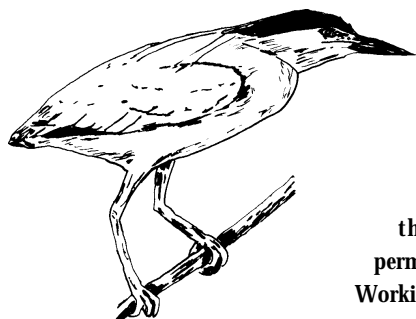
October 25th-31st.

- * Peak time for viewing orchids.
- * Eastern spinebill is active amongst the flowers.
- * The first flush of spring is over.
- * Octopus and cuttlefish eggs wash up on the beaches.
- * Eastern rosellas are hatching.
- * Scented sun orchids start to flower.
- * Gulls leave their nesting islands.
- * Gynea lily flowers fruit.
- * Jacarandas are in flower.
- * Rainbow bee-eaters arrive from the north.
- * Christmas bush puts on cream flowers.
- * Bees swarm.
- * Baby quolls are independent of their mother.
- * Onion orchids in bloom.
- * Wasps look for nest sites.
- * Yellowtail kingfish and snapper spawn.

RUFIOUS NIGHT HERON, *Nycticorax caledonicus*

In a swamp off Wanda Avenue Salamander Bay (known as the Woman's Waterhole), roosts the rufous night heron, also called the nankeen night heron. A quiet approach with a pair of binoculars is necessary as they are alert and cautious. When disturbed they flap heavily to another tree out of sight. It is not good to disturb them as daytime is their resting time and causing them to move from their preferred roost may make them more vulnerable to predators. The Woman's Waterhole is a place of significance to the local Aborigines.

Look for a bird 480mm long chesnut-brown above and cream below. The head is blue-black and the eyes yellow. There are 3 white nuptial plumes on the back of the head.



The night heron is found all over Australia wherever there is permanent water. Working the night-

shift, they hunt in the shallows for animals, insects, crustaceans, fish and frogs. Their call is a loud croak.

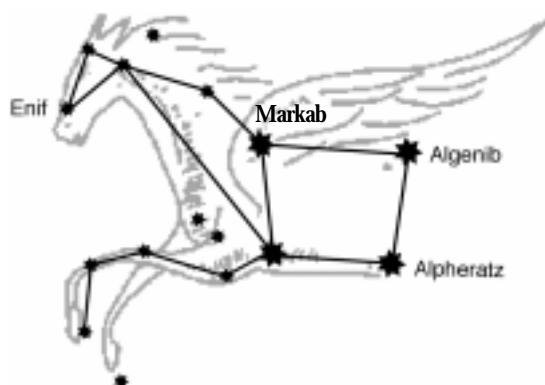
They nest in the spring or at any time of plenty. A nest of loosely assembled sticks is constructed in a tree and sometimes on the ground.

Two or three eggs, light blue-green are laid. Chicks have a plumage streaked brown and white whilst growing to maturity. Non-breeding adults lack the white nuptial plumes.

Look for the rufous night heron anywhere there are trees surrounded by water.



PEGASUS



THE NIGHT SKY

Pegasus, the winged horse sprang from the blood of snake-haired Medusa whom Perseus killed in one of his heroic deeds.

Alpheratz (al-fe-rats) is Arabic for "the horse's navel", and is one of the four stars forming the great square of Pegasus. On the evening of the 25th of October look for Alpheratz at 8pm on a compass bearing of 13° and an elevation of 23°.

Enif (en-if) is Arabic for "nose of the horse". Not a particularly bright star, it shines from a distance of 250 light years away and can be seen on a bearing of 334° and at an elevation of 46°.

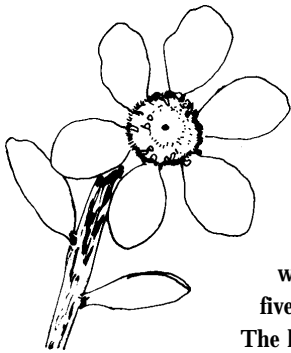
Markab (mar-kab) is Arabic for "saddle" (of Pegasus), and lies diagonally opposite Alpheratz on the great square of Pegasus. It can be found on a compass bearing of 2° and an elevation of 41°.

COAST TEA-TREE, *Leptospermum*

laevigatum. There are large stands of this shrub beside the



bicycle path at Fingal Bay. The flat, stiff, dull, grey-green leaves form a dense canopy. As a small tree it can grow to 8 metres. The bark is fissured, with some flaking in thin strips.



A white, typical tea-tree, five petalled flower appears about now. The flat-topped fruit capsule that follows the flower is unusual for a tea tree having 8 to 10 chambers where all other tea trees have five.

The leaves of the coast tea-tree can be boiled to make a herbal tea. The leaves and young shoots are reputedly good for urinary complaints.



ACORN-BARNACLE, *Catophragmus* species.

This creature attaches itself to mangrove roots and rocks in the intertidal zone. The barnacle is composed of a base shell topped with 2 pairs of plates closing the aperture. The creature inside lies on its back, holding on by its head and kicks food into its mouth with its heels.

Barnacles feed on floating particles of food which they catch in a fanlike "plankton net". Spring is a time of super low tides and



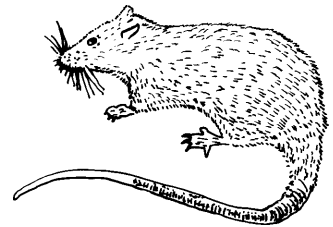
October 25th-31st.



barnacles can be seen safely when the tide is well out. Rock fishermen have little reason to like the barnacle as it will quickly cut through fishing line and lacerate the flesh if contacted.

WATER RAT, *Hydromys chrysogaster*.

The water rat is Australian. Home is beside any fresh or brackish water or on the beach. With webbed hind feet and waterproof fur, it eats anything that lives in the water. This might be aquatic snails and bugs, yabbies, fish, mussels, frogs, turtles or even a duckling seized by the legs from below. In turn they are preyed upon by snakes, fish, birds of prey and cats.



Being capable of raising up to 5 litters of 4 babies each year, mainly in the spring, this rodent is a fast breeder. We do not have the right sort of environment for platypus in this area, so if you see a furry animal floating on the surface and diving, you are probably watching the water rat.

EASTERN SPINEBILL, *Acanthorhynchus tenuirostris*, is a honeyeater with a long curved bill to deal with tubular flowers. Its menu reads something like *grevillea*, *epacris*, *billardiera*, *styphelia*, *banksia*, and *eucalyptus*. It can hover briefly to feed, and snatches insects from the air. If you have any grevillias or fuschias in your garden then at flowering time the eastern spinebill

will visit you. Look for a small, active long-billed bird darting about the flowers. The tail feathers are tipped with white and the wings make a loud clapping sound. Late October is nesting time when a pair will set up a territory to feed their young. For the rest of the year they are nomadic, following the flowering of nectar-rich blossoms.



November 1st-8th.

- * Many birds moult.
- * Black faced cuckoo shrike are in abundance.
- * Crane flies emerge.
- * Baby echidnas are 10 cm long and become too spiky for the pouch.
- * Dingo pups aged 4 months, make their first outings outside.
- * Whales are seen heading south.
- * Lacewings hatch.
- * *Angophora costata* sheds its bark.
- * Blueberry ash starts flowering.
- * Tiger moths about.
- * Wonga wonga vine in seed.

PINE HEATH, *Astroloma pinifolium*.

This sprawling shrub seldom grows more than shin high. The leaves are 2 cm long, pin-like, but have a soft feel.

The torpedo-shaped flowers are 3 cm long, red for most of the length, then turning yellow and green at the tip. The flower falls away from the plant at the lightest touch. This is followed by an edible, sweet fruit.

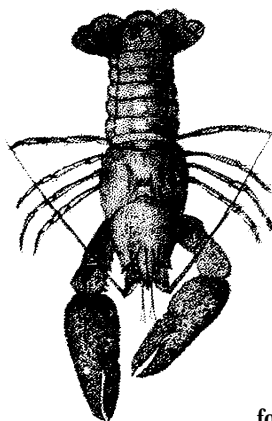
This is a common plant on the mowed fire trails in the Glovers Hill water catchment area. It can be seen beside the bicycle path around Gan Gan Hill in company with a similar-looking plant, cranberry heath.



FRESHWATER CRAYFISH, yabby,

Cherax species, spends winter, from June to September, hibernating in burrows. In doing so it causes damage to farm dams by perforating them with burrows, which terminate in water-filled chambers. Thus they can withstand a long dry spell.

The *cherax* is a smooth-bodied crustacean which lives in soaks, springs ditches and creeks. They grow to 15cm and are a food source for many waterbirds.



They can be caught by lowering a piece of meat on a string into the water. When they attach to the meat the lot is raised to the surface and the yabby is grabbed by hand or scooped up in a net. In September yabbies emerge from their burrows to spawn and shed their shell for a growth period.

In the first year of life the crayfish moults from two to eight times. Even after crayfish reach full size they moult yearly thus getting rid of creatures living on the shell. Should they loose a limb a new one will grow.

As you walk around the 'edge' of our estuary and coastline look for fresh water flowing to the sea. Follow these watercourses upstream and there in the pools will be "mister yabby".

A heap of earth around a hole about 25mm diameter often indicates a crayfish's home. The small black yabbies you find in our creeks will be *Cherax rotundus setosus*.

The water rat is an important controller of fresh water crayfish. Yabbies are also food for any carnivorous fish, bird or mammal.

The female crayfish holds the eggs in a mass under her tail and is said to be in berry.

Sometimes when eating a yabby you will come across what looks like a pair of white stones in its body. They are called gastroliths. This is limy matter formed just before moulting, stored in the stomach and dissolved after moulting to supply some of the calcareous material. Gastroliths have been used in medicine for absorbent and antacid purposes.



COCKLE *Anadara trapezia*.

These molluscs are everywhere in Port Stephens. In the shallows where there is a

little mud with the sand and ribbon weed growing, lie cockles. Some will be on the surface and the rest just under the mud with a syphon extending into the water. The shallow flats at Bagnalls Beach are an ideal place to look for cockles.

The well developed foot is modified for burrowing into sand and mud. This foot also allows the shell to move. The extruded syphon draws in water carrying food particles such as microscopic plankton and organic debris.



When threatened the foot and syphon are withdrawn and the two shells clamp shut. This is also a technique to prevent drying out between tides.

Cockles, like all shellfish, are vulnerable to contamination from heavy metals and sewage. When the shellfish cannot be eaten without purification or cooking, we know that we have gone too far in polluting our waterways. This, unfortunately, is now the case in Port Stephens. Oysters, which are eaten uncooked are the most sensitive to this. Cockles are normally cooked by grilling until they open, or by boiling. The longer they are cooked, the tougher the meat becomes.

To prepare, wash the shells to remove mud and sand, then soak them for several hours in clean water to which salt has been added. The cockles will rid themselves of sand and waste matter.

Port Stephens has a thriving community of cockles, which, for thousands of years, up until the present, have provided man with an easy source of food.

SWORD-GRASS BROWN

BUTTERFLY, *Tisiphone abeona*, so named because its larvae feed on swordgrass, gahnia species, which is found on swampy ground.

Spherical eggs are laid on swordgrass, later hatching into a larvae which are bright green with pale longitudinal lines and tiny white dots. Look for them flying with a slow undulating movement among the swordgrass.



November 1st-8th.

SPOTTED SUN ORCHID,

blue sun orchid, *Thelymitra ixioides*

This terrestrial orchid grows in open sunny areas, and reaches a height of up to 90 cm. A single ribbed leaf grows from the base of the plant and is 20 cm long and 1 cm wide.



The flower is blue (sometimes purple), 25mm

across and is marked with dark spots. Pollination is either by a small native bee or self-pollination, the latter being assisted by the flower staying closed, and the natural shaking of the wind.

The underground tuber is edible. This orchid is common around the Tomaree Aquatic Centre and on the fire trails around Stephens Peak.



SNAIL, *Gastropoda*.

Any junk mail left in your letterbox overnight will bear evidence of how snails eat. Snails live to eat and reproduce.

The first they do by scraping and rasping plant material into the mouth. They have about 20,000 teeth. Snails become shamelessly engrossed in mating and can be seen lying about in vulnerable pairs long after the sun is up and the birds are out.

Most snails are marine but the gastropods live on land amongst the leaf litter. Snails carry their shell on their back and retreat into it when threatened. The main purpose of the shell is to prevent them from drying out.

Snails like humidity and wet weather. The introduced garden snail is considered a pest.

It is only one of over 400 species found in Australia.



November 9th-16th

- * Prawns wait for rain to go to sea.
- * Trigger plants are now common.
- * Young magpies are being fed.
- * Wood-swallows nest after migrating south.
- * Blue flax lily has purple fruit.
- * Flying duck orchids abound.
- * Apple berry and *Lobelia gibbosa* are in flower.
- * Sugar gliders leave the nest for the first time.
- * Antechinus babies stay in the nest or ride their mother's back while she goes hunting.
- * Crimson bottlebrush is in flower.
- * Broad leaf geebung fruit drops to the ground.
- * Scribbly gum sheds its bark.

KANGAROO. Aboriginal name *wamboyn*.

There are three main types of kangaroo that may be seen in this area. Here is a guide to help tell them apart.



Red necked pademelon
Thylogalethetis, has a reddish
hue around the neck.

Swamp wallaby,
Wallabia bicolor, Aboriginal
name *bur-rid*. Dark
brown to black above, light

yellow to orange below. Light yellow to light brown cheek
stripe. Extremities (hands and feet) darker.

Eastern grey kangaroo, *Macropus giganteus*, hairy
muzzle (between nostril and upper lip). A large animal
with grey fur.

Nelson Bay Golf Course is the easiest place to see
kangaroos. Their tracks can be seen along the fire trails
adjacent to the golf course.

Kangaroos give birth at any time of the year. They do



not have permanent shelters
and they like to rest with
their backs protected by a
tree. They are very cautious
and it is hard to creep up on
them.



NEW HOLLAND MOUSE,

Pseudomys novaehollandiae.



Up until 1967 this native mouse was thought to be
extremely rare or even extinct. It was known from only
four dead specimens, and none had been found for a
hundred years. Two CSIRO Scientists were in the Nelson
Bay area trapping animals and discovered a thriving colony
of this mouse species.

Since then other colonies have been discovered along
the east coast of Australia. According to their findings the
New Holland mouse was by far the most common small
mammal in the area (in 1967). In 1993 the most common
species was the *Antechinus*.

The New Holland mouse begins to recolonise burnt,
open forest after about a year of post-fire regeneration. It
seems to prefer sandy country with heath-type vegetation,
especially leguminous perennials less than 1 m high. It is
primarily a seed eater, although it takes insects, leaves,
flowers and fungi.

Similar in size and appearance to the house mouse
(with which it directly competes), it lives for between 18
and 24 months.

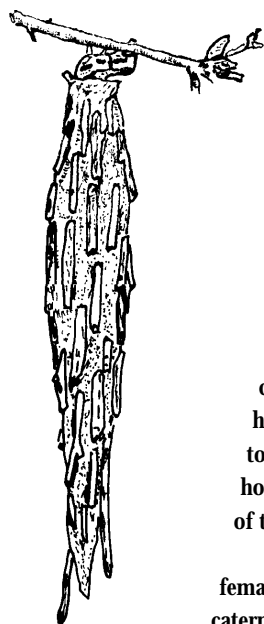
Females produce one litter in their first year and three
or four litters in their second year. Gestation is 32 days and
the litter size is 2-6, born mostly in spring and early
summer.

Look for a grey, mouse-sized rodent, body length
80mm, tail length 87mm. The distinguishing feature
being the tail which is dusky brown above and white
below.

SAUNDER'S CASE MOTH,

Oeceticus elongatus. Hanging outside the wall of your house or attached to the bark of a tree will be this, the largest of the case moths. They make a cheap pet and a worthy subject for study.

The case moth lives in a log of strong silk, to the outside of which they attach sticks. The cutting of the sticks is interesting. The case is fastened to the twig and the animal bites through it. The loose stick is manipulated in the mouth and fastened to the top of the case with windings of silk.



The larvae disappears into the case and bites through lower down to stitch the other end of the twig to the case. When alarmed the larva holds the sides of the case tightly together with the feet, the legs hooking into the silk on the inside of the case.

Male cases are half the size of female cases (150mm long). The caterpillar needs to spend a year in the case protected from the weather and predators. The larvae take the case everywhere with them. When feeding, its head and forelegs project from the top of the case. When climbing they make a silken ladder.

When it is time to turn into a moth the top of the case is closed off. Male larva pupate upside down and leave the case at the bottom. The female stays head up, her case serving as her larvae home, a place to pupate, an adult home, egg cocoon and a coffin.



FLANNEL FLOWER *Actinotus helianthi*.

Nelson Bay has millions of flannel flowers and at this time of year large stands of them will dominate the bush.

The large (6cm) white daisy like flowers are densely hairy and surround a woolly central knob.

The flower is wonderful to touch, the flannel-like texture leaving no doubt as to the origin of its name.

The whole plant is covered in a dense layer of hairs.

November 9th-16th.



This plant belongs to the same family as carrots, celery and parsley. The word *helianthi* means sunflower.

The leaves are blunt, very forked, hairy and grey green. One of our best known and well loved flowers.

FEATHERED HONEY-MYRTLE,

Melaleuca thymifolia. Melaleucas generally have bottlebrush flowers, made up of a number of individual flowers, cylindrically clustered around a stem. In the case of feathered honey-myrtle the number of flowers in the group is small and the feathering of the stamens is elaborate. The overall effect is a very unusual flower.

The plant can grow to two metres in height and is found in open damp places, such as around the Tomaree Aquatic Centre.

The aromatic leaves are small and crowded with visible oil dots, from which can be distilled an oil, rich in cineole, having the smell of eucalyptus oil.

The mauve flowers are in feathery bundles 15mm long held close to the stem.



November 17th-24th.

- * Flying ants swarm on a hot day.
- * Stink bugs appear on lemon trees.
- * Galahs have their annual moult and their young become independent.
- * Red jellyfish appear in Port Stephens.
- * Baby foxes are born.
- * Noisy miner chicks wishing to be fed, chirp from the trees.
- * Red ichneumon wasps are common.
- * Quaking grass puts on its seed head.
- * Phascogale young are free to roam about.
- * Gulls moult their primary feathers.
- * New gymea lily flowering stalks appear.
- * Dusky coral pea in seed.
- * Little wattle birds are active.

DESTRUCTIVE INSECTS

Plague grasshoppers, remove all green vegetation leaving a "desert" behind them.

Termites (white ants) destroy timber in houses.

White grubs, cockchafer beetle larvae, are pests in lawns, pastures and sugar fields.

Cottony cushion scale, "mealy bugs", stress and kill the vegetation they live on.

Rutherglen bug, a small grey insect attacks garden and crop plants.

Jewel beetles have destructive wood boring larvae.

Click beetles, the larvae of these are called "wire worm" and they destroy pastures.

Apple root-borer, a weevil that eats the roots of orchard trees.

Aphids suck the juices from tender shoots on flowering bushes.

Longicorn beetles have destructive wood-boring larvae.

Codlin moth larvae destroy apples and pear.

Pumpkin beetle, the larvae eat the petals and fruits of pumpkin and melon plants.

Poropsis, a leaf-eating beetle that strips wattle trees.

Bogong moth, the larvae, called "army worm", destroy pastures.

Vine moth and painted apple moth are native moths whose larvae feed also on introduced plants.

HOVER FLIES can be seen on sunny days hovering over plants. Some are black and yellow banded.



Their larvae crawl over plants in search of aphids which they pierce with their jaws and suck the body juices.

The pupae of the hoverfly attach to leaves and can be destroyed by a parasitic wasp.

CICADAS are sucking bugs, as are leaf hoppers, lerps, aphids, scale insects, mealy bugs, shield bugs, bed bugs, water scorpions, water boatmen and lots of others. They all have developed a proboscis through which the juices of plant tissues are sucked.

School boys have a fascination with cicadas. They are sought, caught, kept in matchboxes or in trouser pockets and swapped.

From now on their sounds can be heard in the trees as a signal that summer is here. The call is produced in the abdomen by cracking plates in and out, like a wobble board. The sound is very loud and the cicada turns off its own hearing when producing the call.

Only the males produce this sound, which is amplified by the almost completely hollow body of the insect. (*"Happy the Cicadas' Lives, For they all have voiceless wives" - Rhodes*).

Cicadas cut slits in the branches of trees and lay their eggs there. On hatching, the flea-sized young drop to the ground and dig in. Eventually they find a root to establish themselves on, extracting the sap through their piercing mouth parts. Here they will live and grow for about five years to emerge late November through a perfectly circular hole in the ground. Under cover of darkness the nymphal cicada attaches to a tree trunk, splits the skin down its back, emerges, spreads its wings to dry and flies off for a short life of baby-making.

There are about 200 species of cicada in Australia. Common local varieties are the green monday, yellow monday, black prince and the double drummer. The cicada is the world's noisiest insect.



SMALL WAX LIP ORCHID,

Glossodia minor. This terrestrial orchid has a showy flower, which, in a breeze, swings about on an improbably slender stem. The ground-hugging leaf does not compete for attention.

The purple orchid flower is 2 cm across, with five petals surrounding the relatively large reproductive parts. It is abundant in the damp open areas around Salamander.

The underground tuber is edible.

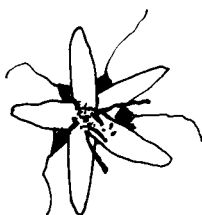


COMMON FRINGE MYRTLE,

Calytrix tetragona.

The flowers on this erect shrub are instantly recognisable by the numerous long sinuous hairs under the flower.

These maroon sepals remain after the white-to-pink flowers fall off. This fringe is thought to be a device to detour ants away from the nectar. A heath-like shrub, it grows to 2 metres tall. The 5 mm long slender green leaves are erect and finely toothed. It is common in dry sandy areas.



WANDERING ALBATROSS,

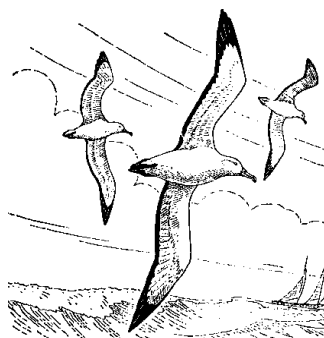
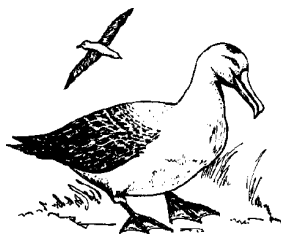
Diomedea exulans. There is a patch of water so rich in fish that marlin and tuna come in close to the rocks for the feast. Here also the albatross soars, swoops and lands on the water for a meal. The place is at the water's edge on the eastern side of Tomaree. Land-based game-fishermen use these rocks. During the hours they spend there, they will see most of the sea-birds working the waters, including

November 17th-24th.

the largest flying bird, the albatross.

Living for more than 35 years and with a wing span of up to 3.25 metres this superb bird constantly circles the southern hemisphere.

They breed on Sub-Antarctic islands in September and the young take almost a year to raise. The birds pair for life and wait one more year before they try to raise another chick.



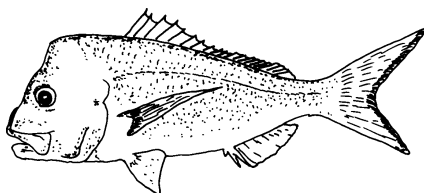
SNAPPER, *Pagrus auratus* Aboriginal name

gara. In spring and early summer snapper, aged about 5 years, move into sheltered waters of Port Stephens to spawn. This occurs when the water temperature is 18°. The 1 mm diameter spherical eggs are fertilized externally and hatch in a few days.

These tiny "red bream" spend a few years amongst the ribbon weed of the estuary before venturing out to the offshore reefs.

After a year, known then as red bream or cockney bream, they have grown to 10cm long and spend the winter outside the harbour in deep channels. They return in the warmer months to the sheltered bays and shallow water. Snapper become reproductively mature at 3-5 years.

After 10 years of growth snapper are half a metre in length. You can tell the age of snapper by counting the growth rings on the scales, one ring for each winter. A 12kg snapper will be about 25 years old. Living off fish, crabs, marine worms, starfish, sea urchins and shellfish they develop a bump on their head and can weigh as much as 20 kg.



November 25th-30th.

- * Eastern rosella young are out of the nest and demanding to be fed.
- * Muttonbirds lay their eggs on Broughton Island.
- * This is a good time to collect seeds from the bush.
- * Grasshopper plagues begin.
- * Butcherbird young hatch.
- * Scribbly gums are in flower on our hill tops.
- * Antechinus babies are independent.
- * Wild parsnip is in flower.
- * Mistletoe flowers fall to the ground.

THE NIGHT SKY.

PEGASUS is in the north-western part of the sky and will soon set. The Southern Cross is almost invisible on the horizon in the evening, Orion will rise to dominate the evening sky in the summer months. Some of the more obscure stars are now "out".

FOMALHAUT (fo-mal-ot) is Arabic for "mouth of the southern fish". It is well separated from stars of the same brightness and is on a compass bearing of 260° and an elevation of 71°.

Fomalhaut is a red star and was once one of the four royal stars of ancient astrology, along with Antares, Regulus and Aldebaran.

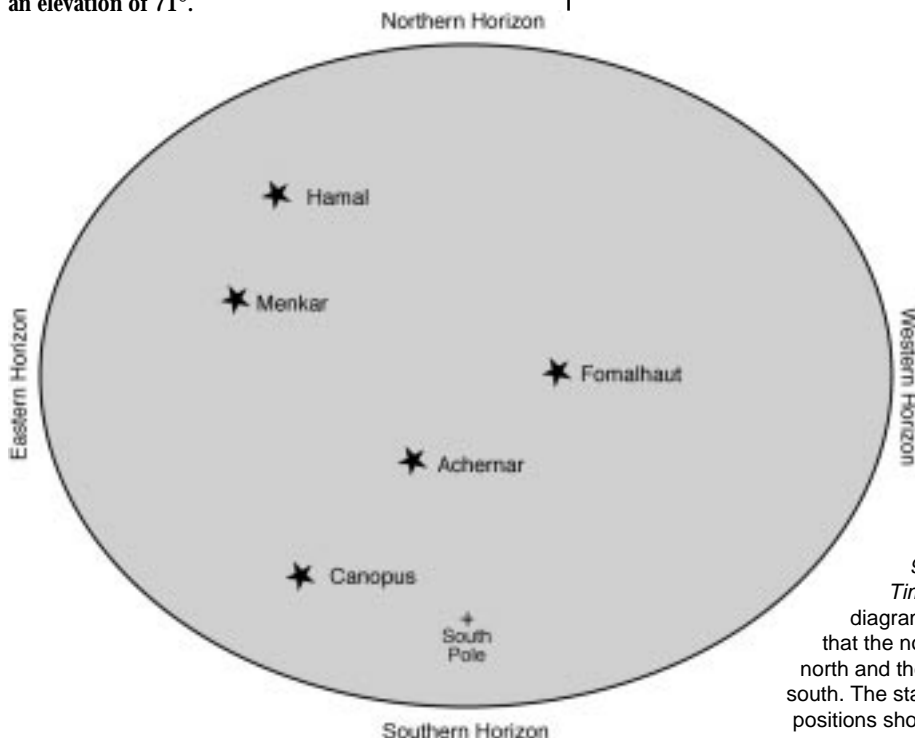
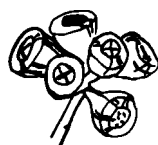
HAMAL (ham-al) is Arabic for "full-grown lamb" and is the brightest star of the inconspicuous constellation, *Aries*, the ram. It is on a compass bearing of 150° and an elevation of 30°.

MENKAR (men-kar) is Arabic for "nose of the whale". At 1,100 light years away it is the most remote of the major stars.

Menkar is at the end of the inconspicuous constellation *Cetus*, the whale, with no bright stars nearby. Bearing 40°, elevation 38°.

SCRIBBLY GUM, *Eucalyptus haemastoma*.

This gum tree is a koala food plant. In Nelson Bay the scribbly gum tends to grow at the top of rocky hills such as Gan Gan. Our koalas spend most of their time in the wetter areas where swamp mahogany grows. Thus the two species are a long way apart.



The Night Sky

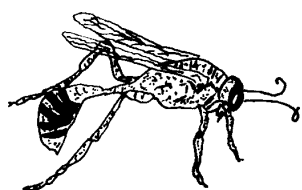
For the evening of November 25th, 9pm, Daylight Saving Time. To use, hold this diagram above your head so that the northern side is pointing north and the southern side faces south. The stars will appear in the positions shown on the diagram.

The bark is a mottled white-green and blue, marked with scribbles. These scribbles are caused by the burrowing of a moth larvae. When the bark sheds, the burrowings come the surface for all to see for the next twelve months.

This tree flowers twice a year, March to June and September to December. Before flowering a tiny cap covers the round bud which is held on a long stalk. The cup shaped fruits are topped with a flat, reddish disc.

MUD DAUBER WASP, *Sceliphron laetum*.

Many wasps live in colonies but this large (30mm) orange and black insect lives a solitary life. After mating, the female mud dauber wasp goes about making her private mud nest. This is one species of wildlife that comes to you. About your home there are bound to be dozens of these mud cylinders in brick cavities, under eaves and even in your letter box.



Flying low, buzzing loudly and looking every inch a wasp, this visitor is only interested in reproduction and poses no threat to people.

Once a part of your house has been chosen as a nest site you can sit back and watch mother wasp carrying balls of mud in her jaws to the construction site. Mud may be locally available, otherwise the wasp will carry water to an area of fine dirt and mix them together to make the mud.

When the chamber is ready an egg is laid and the cell closed up. But before this happens the wasp seals in a food supply. She collects spiders, caterpillars and insects which are paralysed by her sting. Thus a fresh supply of meat waits for the emerging, hungry young wasps. The wasp grub pupates inside the mud cell before emerging as an adult mud wasp.

These wasps do not guard their young, so it is safe (for you anyway) to scrape away the dried mud to find egg and paralysed spider, or wasp caterpillar devouring the larder, or pupating mud wasp.

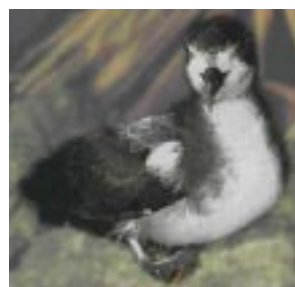
GOULDS PETREL, *Pterodroma leucoptera*.

Nelson Bay has its own bird, the Goulds petrel. The only place in the southern hemisphere that it nests is on the steep, western slopes of Cabbage Tree Island. This is the northernmost and largest of the three islands just off the entrance to Port Stephens. A few birds also nest on nearby Boondelbah Island.

Look for a swift-flying small bird, with white

November 25th-30th.

underparts to the wing and dark upper parts, flying out to sea. It has a dark head with a white face and throat. Right now it is laying its single egg in a rock pile, hollowed fallen tree or short burrow. The island is a mere 20 ha in



area and the world population is estimated at less than 2000. The total number of Goulds petrels known to be nesting on Cabbage Tree Island is 426 nesting pairs (1996), producing about 300 fledgelings yearly.

They can be seen around Cabbage Tree Island between October and April. The birds circle around the island just after dark, then tumble through the forest canopy to their nests. In the morning they leave before first light.

One threat to this bird is the sticky seed of the bird-lime tree which gets caught up in their feathers, incapacitating them. Currawongs and ravens also kill adult and baby birds. Rabbits, which have just been eliminated, prevented the forest from properly regenerating for the past 60 years. Should cats or rats ever be introduced to this island it will be the end of the species.



VANILLA PLANT, rush lily, *Sowerbaea juncea*. This plant has one of the great perfumes of the bush. Whilst it is called vanilla plant, the fragrance is more like chocolate-caramel. A small erect herb, it can be found in damp areas carrying its fragile cluster of mauve flowers.

Arranged in terminal clusters, the six lobes of the flower open briefly to display the 3 protruding yellow stamens, then droop and close up. The slender grasslike leaves are 1mm wide and 30cm long, arising from the base of the plant.

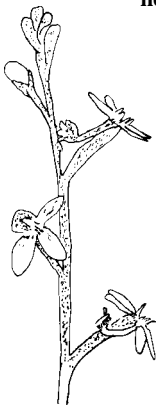


December 1st-8th.

- * Beard heath develops berries.
- * Oyster spat is collected.
- * Mud dauber wasp makes its nest.
- * Jacaranda blooms cover the ground.
- * Half of the christmas bush flowers have turned red.
- * *Lobelia gibbosa*, mountain devils and apple berry are in flower.
- * Broad leaf geebung is in flower.
- * December to January is peak birthing time for koalas.
- * Handsome flat pea seed-pods explode.
- * Jewel beetles and scorpion flies appear on blossoms.
- * Giant gum caterpillars wander about.

TRIGGERPLANT, *Stylidium graminifolium*.

A perennial herb with a big surprise, the fastest moving flower in the country. The trigger plant is notable for its highly active method of pollination. There is a pool of nectar at the bottom of the floral tube. When a small insect crawls into the tube seeking nectar, a hinged arm, which has been waiting cocked back to one side, is sprung and flicks across the flower, like a sledge hammer from nowhere. The action is lightning fast. The insect is showered with pollen. Within 20 minutes the arm resets itself for the next visitor.



The flowers which can number a dozen or more per stem, are pink with a white centre, 2cm across and have five petals, one of which is inconspicuous. Trigger plants appear in November and persist until late autumn. The open areas of bushland around the Tomaree Aquatic Centre are good places to look for them.

The trigger plant is a wonderful source of surprise for people of all ages. Pull out a thin slither of grass and prod about at the centre of the flower to make the mechanism perform. The experience is surprising and full of wonder.



SMOOTH-BARKED APPLE, rusty gum,

Angophora costata.

Aboriginal name goondaree, mun-um-ba.

The closest Nelson Bay comes to a "white christmas" is the flowering of the angophoras. This tree has perfectly smooth pinkish bark, and like the closely related gums, the limbs are convoluted.



Along with the massive flowering that occurs at this time of year, the tree also chooses to shed its bark. Over the next few months the newly exposed bark will turn from orange to a mottled purple and pink.

The angophora is not a eucalypt, but in most respects it looks like a gum tree. There are two differences to look for. Angophora leaves are opposite, eucalypt leaves are alternate on the stem. The angophora fruiting capsules are ribbed and have no "cap". Eucalypt "gum nuts" always have a cap and are smooth.

Angophoras contribute much material to the ground litter. Apart from the usual regular dropping of leaves, the base of this tree is littered with old fruit capsules that persist for several years. Large amounts of bark are shed at this time of the year, also peaking in late December.

The creamy flowers form a dense canopy at the top of the tree and



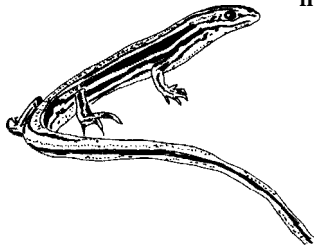
are best appreciated from the lookout on Gan Gan Hill, here it can be seen that the smooth barked apple represents about a quarter of all the trees in Nelson Bay.



COPPERTAIL SKINK *Ctenotustaeniolatus*

prefers dry sandy country and can be seen basking in the sun on the sides of tracks in banksia and angophora country. There are about 600 species of skinks world wide and about 150 species in Australia. Skinks are able to loose their tail and grow another. They also have overlapping scales.

The coppertail grows to 18 centimetres, brownish above with distinctive longitudinal stripes of black with yellow to cream edging. The tail has a reddish tinge.



It is distinguished from the striped skink by the absence of the freckled pattern on the sides. An insect eater, it will occasionally snack on flowers and foliage. Five eggs are laid in the summer

beneath rocks. The young have a bright orange tail which fades to brown as they mature to adults.

KOALA, *Phascolarctoscinereus*. Aboriginal name

goola. If you are not sure if koalas live near you, their bellowing in December will let you know. The male has a deep, guttural call and the female a high pitched cat-like voice. This calling helps females find a mate, and warns other males that the dominant male is about. At this time any female without a cub is fair game.



Thirty five days after mating, the tiny koala is born and crawls into the pouch where it will stay for 7 months. After leaving the pouch it will spend another 4 months riding on its mothers back. By this stage it will weigh 1/2 kg. At age 18 months it will have to leave its mother and become a solitary animal. Koalas live for about 13 years if they are female and 10 years if they are male.



Male koalas mark their territory with a scent gland on their chest, by rubbing it on branches

December 1st-8th.

and trunks. Other males will sniff a tree before climbing it. Koalas get most of their moisture requirements from the gum leaves they eat. Their hands have a grip similar to the ringtail possum, with two fingers opposing the other three. To save energy, they sleep 19 hours a day and spend the other 5 hours, mostly at night,



eating, changing trees once or twice.

The main hazards to existence are cars, dogs, swimming pools, *chlamydia* and loss of habitat.

Chlamydia psittaci is a sexually transmitted disease that affects the eyes and the urinary and reproductive tracts. Koalas with this problem usually have a dark, wet patch on their bottom.

Koalas will rest or seek safety in any tree, but they eat mainly the leaves of swamp mahogany, broad leaved paperbark, blackbutt and scribbly gum in this area. Learning to recognise these trees is the first step in finding the koala. The best place to see koalas in the wild is at Lemon Tree Passage in a park that runs from the waterfront shops, around the water's edge.

If you want to do something to help koalas then trying to prevent loss of habitat is a good way to start. Farmers, land developers and sand miners are some of the groups that clear land totally. You could plant suitable trees in your own backyard and help establish safe tree corridors between suitable areas. Koalas need to eat a variety of foods to keep healthy. As part of a plant's natural defence system the leaves of some plants are made unpalatable or even poisonous at certain times of the year.

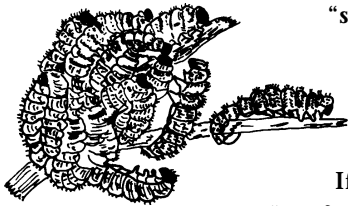
If you have a swimming pool, attach a thick rope to the fence and into the pool to enable the koala to climb out. If koalas visit your garden do not use garden sprays, pesticides or creosote. Keep your dog from roaming at night. Watch out for koalas on the road. If you find an injured koala contact the Native Animal Trust Fund carers or the National Parks and Wildlife Service.



December 9th-16th.

- * Christmas beetles fly against windows at night.
- * Shark egg cases and bluebottles wash up on beaches.
- * Pigmy possums have their young.
- * Flies breed and multiply.
- * Christmas bells are in flower.
- * Young wombats are 6 months old, fully furred and leave the pouch.
- * Saw banksia is in flower.
- * Nests are full of baby birds.
- * The rare leafless tongue orchid comes into flower on Gan Gan Hill.

SAWFLY, *Phylacteophaga froggatti*, gets its name from the sawlike cuts in vegetation into which the female lays her eggs. The larvae look like caterpillars and can often be seen in tangled clusters around a fork in a gum tree. These are the famous



“spitfires”. When pupating they leave the trees to spin a silken cocoon in the soil.

If disturbed the “spitfires” wave their abdomen and squirt a strong smelling liquid from the mouth. It consists of the oils contained in whatever gum it is feeding on.

When an individual sawfly caterpillar gets separated from its group it taps a signal with its tail. The group responds with tail taps and a reconciliation is made.



They feed side-by-side touching each other. Small groups will locate other groups and join up. They feed at night, so when you see them in the day, they will be

resting in a group twined around a stem. Pupating caterpillars eventually emerge from underground, in the summer, the winged females full of eggs. This is where the “saw” is brought into action. It is both a cutting tool and an egg laying tube. Dozens of sausage shaped eggs are laid in a “blister” on a gum leaf.



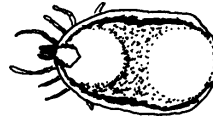
TICK, *Ixodes holocyclus*.

Life for this tick, an Australian species, starts as one of 3000 eggs laid by the female in January. On hatching, these six legged larval ticks, now the size of a pin head, climb up any available vegetation, hoping to become attached to a passing animal. It is probably a long and fruitless wait for most of them. Those ticks lucky enough to find their first host dine on its blood for about 4 days, then drop to the ground. This happens around March.



On moulting it climbs the vegetation again, this time as an eight-legged nymph in July. If lucky a second time it will attach to another animal and again drop to the ground after a feast of blood.

After shedding its skin, it emerges as an adult and again climbs the vegetation in October for a last, and for some animals, most deadly meal of blood. The male tick is harmless.



Tick bites in humans are rarely fatal. About 20 people have died this century in NSW from tick poisoning. The venom of the tick is produced in its salivary glands. It acts as an anticoagulant and contains a neurotoxin.

Ticks range in size from minute, to 2cm long for an engorged female. The colour is brown or blue-grey. The newly-hatched tick has six legs whilst the adult has eight. Eventually the female lays her eggs in a damp place to renew the life cycle.

MILKMAIDS, *Burchardia umbellata*.

A plant with everything: good looks, an attractive perfume and an edible part.

An erect perennial herb, milkmaids grow to 60cm high. A very common species, they should be in flower now in damp open areas, such as around Salamander and Stephens Peak.



The flowers are white, 2cm across, with dark purple ovaries and anthers. Narrow 15cm long leaves grow from the base of the plant. The underground bulb is edible.

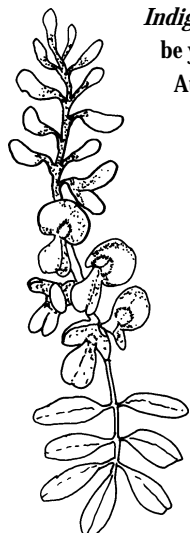
BLUEBOTTLE, *Physalia* species.

Doomed by its air bladder to float on the surface of the sea and at the mercy of the wind to provide speed and direction, it is no surprise to find them washed up, en-masse, on our beaches.

The bluebottle, or Portuguese man-o-war, has long trailing "fishing" tentacles which look like long threads of tiny blue beads, filled with stinging cells which enable it to paralyse its prey, generally small fish. Food is drawn up towards the float to be digested by the hundreds of feeding polyps which make up this "single" creature.

The bluebottle is not a single animal, but a group of organisms which develop from a single egg and live in a type of colony. One member of the group is the gas filled bubble, others the tentacles and still more the feeders. Understandably there are few enemies of the bluebottle, although turtles do eat them. The name Portuguese man-o-war was coined a long time ago by sailors who noticed that these creatures "sailed" at an angle to the wind.

Should you find some washed up on the beach look nearby for the bright blue bluebottle fish which lies around the bluebottle's tentacles. Immune to the poison they live in groups of up to a dozen, feeding on pieces of food left over by the bluebottle.



AUSTRALIAN INDIGO, *Indigofera australis*. What at first seems to be yet another pea-flower turns out to be Australian indigo.

Its use as a dye was explored in colonial times but the product was never up to standard. The Aborigines had a use for this plant as a fish poison.

Australian indigo is a lightly-foliaged shrub, growing to 2 metres. The leaves are grouped into nine to twenty one leaflets.

The pea-shaped flowers are pink to lilac in short sprays, and bloom from spring to summer.

December 9th-16th.

CHRISTMAS BEETLE, *Anoplognathus*

species. These beetles announce their arrival this time every year by crashing into your windows at night. If they do make it inside, they then entertain you by flying noisily around the room.



You are likely to come across the Christmas beetle in its larva form when digging in the garden. They are called curl grubs and are white with strong heads for living underground, feeding on roots.

They are not the famous witchety grubs that some people suppose, though they are edible. The Christmas beetle is one of the scarab beetles. Its body is covered with smooth hard plates of metallic green or purple. In the beetle stage it lives on eucalypt leaves, and large numbers of them can defoliate a tree.



LEAFLESS TONGUE ORCHID, *Cryptostylus hunteriana*. On a small patch of ground on the slopes of Gan Gan Hill lives, for now, this rare ground orchid. For a month either side of mid-December our rarest plant species is on display. Only a dozen individuals now survive at this location. There are only 200 known plants of this species in the world. Look for a green, leafless stalk about 300mm tall, bearing one or more red, furry, upside-down tongue-like flowers. Pollination is by 'pseudo-copulation' with a male wasp which is attracted by a scent. The plant relies on the presence of an underground fungus for its continued survival. By February the plant has withered back to its roots, leaving no trace on the surface for the next 10 months.



December 17th-24th.

- * Kookaburra chicks are fully independent.
- * Look for baby brushtail possums peeking out of their mother's pouch.
- * Blue wrens are seen more often.
- * Mosquito populations breed up.
- * Dagger hakea is in flower.
- * Bark of *Angophora costata* litters the ground.
- * *Prostanthera densa* is in flower on the cliffs.
- * Wombat berry is in fruit.
- * December 22nd, Summer Solstice, longest day of the year.

MANTIDS are much admired killing machines.

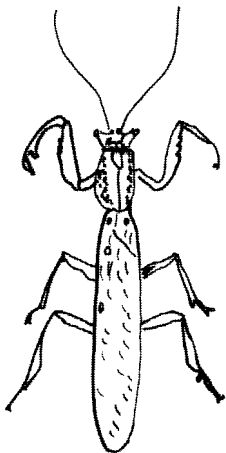
If you see one, it has made a mistake. The whole strategy is to be as green and leaflike as the vegetation on which it rests.

The front legs are not used for walking, but are elongated and folded up ready to lash out. Once snatched by these spiny grippers there is no escape.

Notice the eyes are far apart, to better estimate when their victims are within range. Even the male becomes a victim during or after mating. The female's wings are shorter than the males, only reaching halfway down their backs.

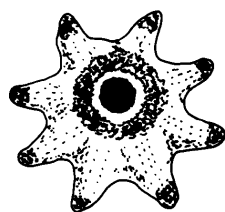
You may occasionally come across the mantid's egg case stuck to a plant. It has the texture of papier mache or polyurethane foam. The female encases the eggs, about a hundred of them, in a frothy mass which hardens in air.

This egg case probably protects the young from temperature and humidity changes, but it is too soft to protect it from other insects. Often, as soon as the eggs are laid, a small wasp will lay its eggs inside the mantids eggs. The hatching wasp will eat the contents of the mantid egg.



SEASTARS, starfish, can be found in rock pools and anywhere on the sea floor from high tide level to 5000 metres below sea level.

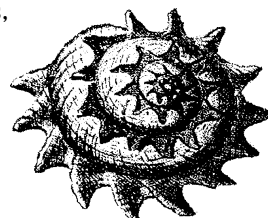
Seastars come in many shapes and types, 5 arms is about normal, but some can have up to 50 arms. If an arm is 'lost' another will grow in its place, another seastar might grow from the lost arm.



Seastars keep their stiffness with a frame of plates made from the same material that coral reefs are made from, calcite.

Seastars move about very slowly on their hundreds of tiny feet. Turn a seastar over and have a look at them. There is a mouth in the centre. The seastar simply walks over its prey and starts devouring it.

They eat molluscs, crustaceans, worms, anemones and coral polyps. Seastars pull apart shellfish, like oysters, with a steady pressure and insert their inside out stomach to digest the contents.



Turn a seastar over and watch it slowly right itself. Look for them in rock pools, especially at low tide.

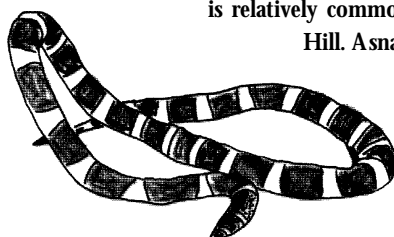
BANDY BANDY, *Vermicella annulata*.

Aboriginal name wirragaderra.

Harmless to man, this short (0.5m) blunt snake has a highly distinctive colouring of alternating black and white bands. At night it burrows underground looking for blind snakes and small lizards. This nocturnal habit means that you are unlikely to see one unless you turn over a rock or log.

It lays up to six eggs and is sexually mature at 2 years. The young are first seen in the autumn.

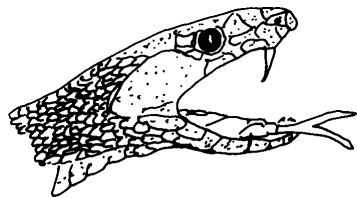
When alarmed the bandy bandy will loop parts of its body off the ground, but it is unlikely to bite and is considered harmless to man. The bandy bandy is relatively common on Gan Gan Hill. A snake-eating snake.



EASTERN BROWN SNAKE ,

Pseudonaja textilis Aboriginal name kowwerree.

Less common than the black snake, the brown snake is far more dangerous. After the tiger snake it is the next most frequent cause of serious snake bite in Australia. It lives on rats, mice, lizards and other snakes. To keep it away from your house and buildings it is necessary to keep down the mice and rat population.



The brown snake attacks quickly and aggressively, striking repeatedly and accurately, gripping strongly to inject as much of its venom as deeply as possible.

The venom is the second most toxic of any land snake in the world. If bitten a severe headache appears within 15 minutes and by 30 minutes the blood does not clot. After that paralysis develops slowly.

When biting small animals, it winds itself around them, holding them until they are paralysed. When attacking it curves into an S shape. Brown snakes can grow to 2.4 metres, with the average specimen being 1.5 metres in length.

It is a uniform tan, grey or dark brown in colour. In adults the belly can be cream, yellow or orange.

The brown prefers dry country and is active only during the day. It lays a clutch of up to 30 eggs in late spring or summer. Males can be seen in combat during this period. A litter may contain both banded and unbanded individuals.

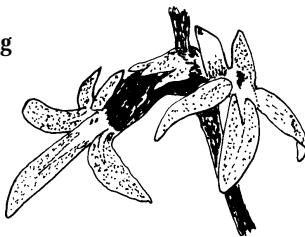
TALL LOBELIA, *Lobelia gibbosa*.

Four varieties of lobelia grow in this area, each blessed with stylishly curved, vibrantly coloured flowers

The rich blue purple flowers have 5 petals, two short curled back ones at the top, two curved ones forming wings at the side and a long beckoning one in the centre.

The purple colouring gives way to white at the centre of the flower.

They can be found scattered all throughout the bush and can be seen on the uphill side of the road leading to Gan Gan Lookout.



December 17th-24th.



CHRISTMAS BUSH,

Ceratopetalum gummiferum.

Visitors to Nelson Bay at this time of the year often take Christmas bush plants home with them. As a garden plant outside of this area, they usually do not do well.

It thrives both in the garden and everywhere in the bush in this locality.

The flowers that appear in November are white. After pollination the sepals swell and turn red, attracting birds which arrive to disperse the capsules inside the sepals. By Christmas time they turn bright red to become our most envied floral display.

The bark is rough and brown. The finely toothed leaves are opposite and are arranged in groups of three.



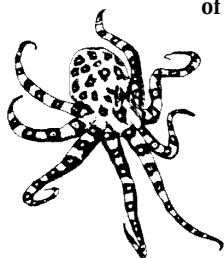
December 25th-31st.

- * Man is everywhere.
- * Bushfire season.
- * White-fronted terns visit from New Zealand.
- * Some grass trees are in flower.
- * Mud wasps are active.
- * Many ground orchids shed their seeds.
- * Wattle seeds are plentiful.
- * Gum emperor moth caterpillars feast on eucalypts.

BLUE RINGED OCTOPUS,

Hapalochlaena maculosa, live everywhere in the estuary of Port Stephens. They can be found in the shallows of Tanilba Bay, on the beach at Corlette and anywhere along our coastline.

They hunt at night for crabs. The octopus swims over the victim and sprays poisonous saliva into the water around it. Within minutes the crab is paralysed and the octopus eats it. There is a parrotlike beak at the junction of the 8 arms.

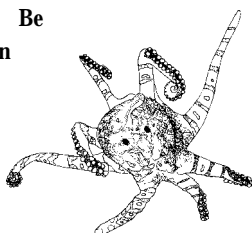


The blue-ringed octopus is small, being only 20cm across the outstretched arms. It contains enough venom to kill 10 people. The poison interferes with the movement of impulses down the nerves, resulting in paralysis. If mouth

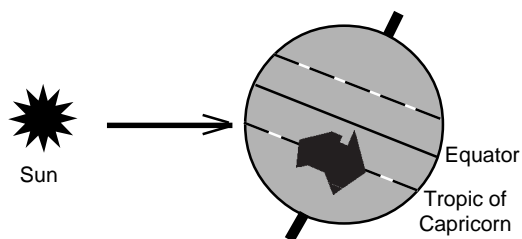
to mouth resuscitation is not given the victim will soon die.

When undisturbed this octopus has bands that are dark brown to ochre in colour with blue circles superimposed on the bands. If picked up or disturbed the bands darken and the blue rings become brilliant. This is your last warning.

The blue-ringed octopus is common and the killing of a few individuals will have no effect on the overall population. It is not aggressive and will happily coexist if left alone. Be aware of its possible presence in shallow water when turning over stones or looking in empty shells or cans.



Summer Solstice



The Summer Solstice occurs on the 22nd December and is the time when the sun reaches its southernmost position. On this day the sun is directly overhead at the Tropic of Capricorn (23° 27' South Latitude). This happens because the earth's axis is tilted at an angle of 23° 27' to the plane of the earth's orbit around the sun. The Summer Solstice is the longest day of the year. From now until June 22nd the days will be getting shorter.

The Night Sky

ALDEBARAN (al-deb-a-ran) is an Arabic word meaning "follower" (of the Pleiades). Aldebaran is one of the eyes of Taurus, the bull. Taurus's head is lowered, ready to attack Orion. *Pleiades*, the seven sisters, were the object of Orion's affection. Atlas put Taurus in the way to foil the encounter.

Aldebaran can be seen at 9pm Daylight Saving Time on the 25th December on a compass bearing of 26° and an elevation of 31°.

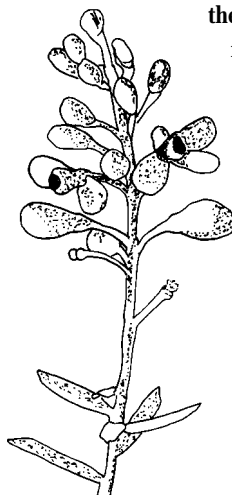
MATCH STICKS, match heads, heath milkwort, *Comesperma ericinum*.

The flowers of this 2 m tall shrub add a welcome rich pinkish-purple colour to the bush in spring and summer.

The name "matchsticks" comes from the shape and colour of the unopened flower which has a teardrop shaped head on a short slender stem.

On opening, the flower shows its five petals as three small outer and two large inner sepals.

The name *Comesperma* is Greek for "hair-seed", referring to tufts of hair on the seed. The leaves are soft, flat and spirally arranged. Match sticks are common in the Glovers Hill area.



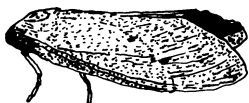
WOOD MOTH.

Piles of sawdust at the base of a tree are a good sign of the presence of the wood moth. In its caterpillar stage it spends 2 years living inside the tree, feeding. The sawdust produced by its burrowing activity is pushed out through a small hole in the bark.

Eventually the caterpillar, 15cm long and 3cm in diameter, pupates, hatching into a moth. In the pupae stage it becomes very attractive to the parasitic wasp. The braconid wasp has a 4cm egg laying tube with which it penetrates the bark and wood to lay its eggs into the sealed-off grub.

Those grubs that make it to the moth stage leave evidence of their exit from the tree in the form of an empty pupal shell, protruding from the hole in the tree. Yellow tailed black cockatoos chew through the stems of young eucalypts to get at the grubs.

The moths mate, lay eggs and the cycle begins again. These wood moths are one of the "witchetty grubs" of bush tucker fame.



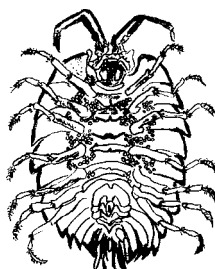
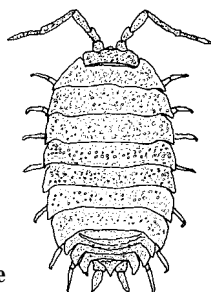
SLATERS, *Isopoda*,

live in your compost heap and under rocks. They are grey and have flattened bodies. Some, the pill bugs, can roll into a ball.

Slaters feed on decaying vegetable matter and associated fungi. Some are scavengers and feed on dead animal matter. Also known as wood lice they make a cheap pet. Take a few (they like each other's company) from under the bricks and put them in a box with a lid. They like to live in the dark. The box will need some breathing holes and plenty of damp, rotting wood or leaves.

Slaters have 14 legs and breathe through gills on the 6 front legs. In the summer you may see eggs in a transparent pouch on the underside of your slaters. Like snakes and crabs, slaters regularly shed their skin. When you have tired of your new pets, put them back in the garden where they will resume the job of clearing up all that rotting vegetable matter.

Slaters developed from marine creatures, like lobsters and crabs. They live on land now, but they still need to be kept moist. They do this by



December 25th-31st.

staying out of the midday sun, and confining their activities to night time and moist places. The early development of the young must still take place in water. That is done in the mother's brood-pouch under her body.

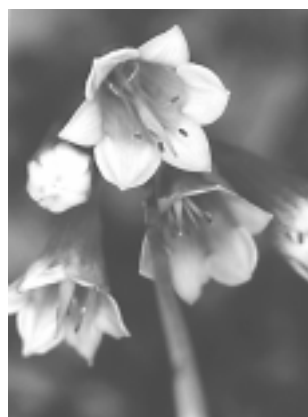
CHRISTMAS BELL,

Blandfordia grandiflora.

This plant thrives in swamps and wet areas. By now the bells should be in bloom around the base of Stephens Peak. They are locally threatened as a species because of illegal picking and "development" of the land that they need to grow on.

Christmas bells are showy in terms of size, colour and number of blooms. As many as ten bells, each 7cm long, crowd the top of the flowering stem. Each bell is orange-red, becoming yellow at the tip, and has a waxy feel. The stamens within rattle in the wind.

A protected plant, it will be in flower from now until mid winter.



LANDHOPPERS, *Mysticotalitrus tasmaniae*,

are small crustaceans about eight mm long. Normally you would expect this type of creature to be found in the sea. Landhoppers live in damp places and breathe through gills on their legs. After rain when the ground is damp, they leave the leaf litter and travel about. Eventually the ground dries out and thousands of them are left stranded to be cooked in the midday sun. Landhoppers jump to escape capture.



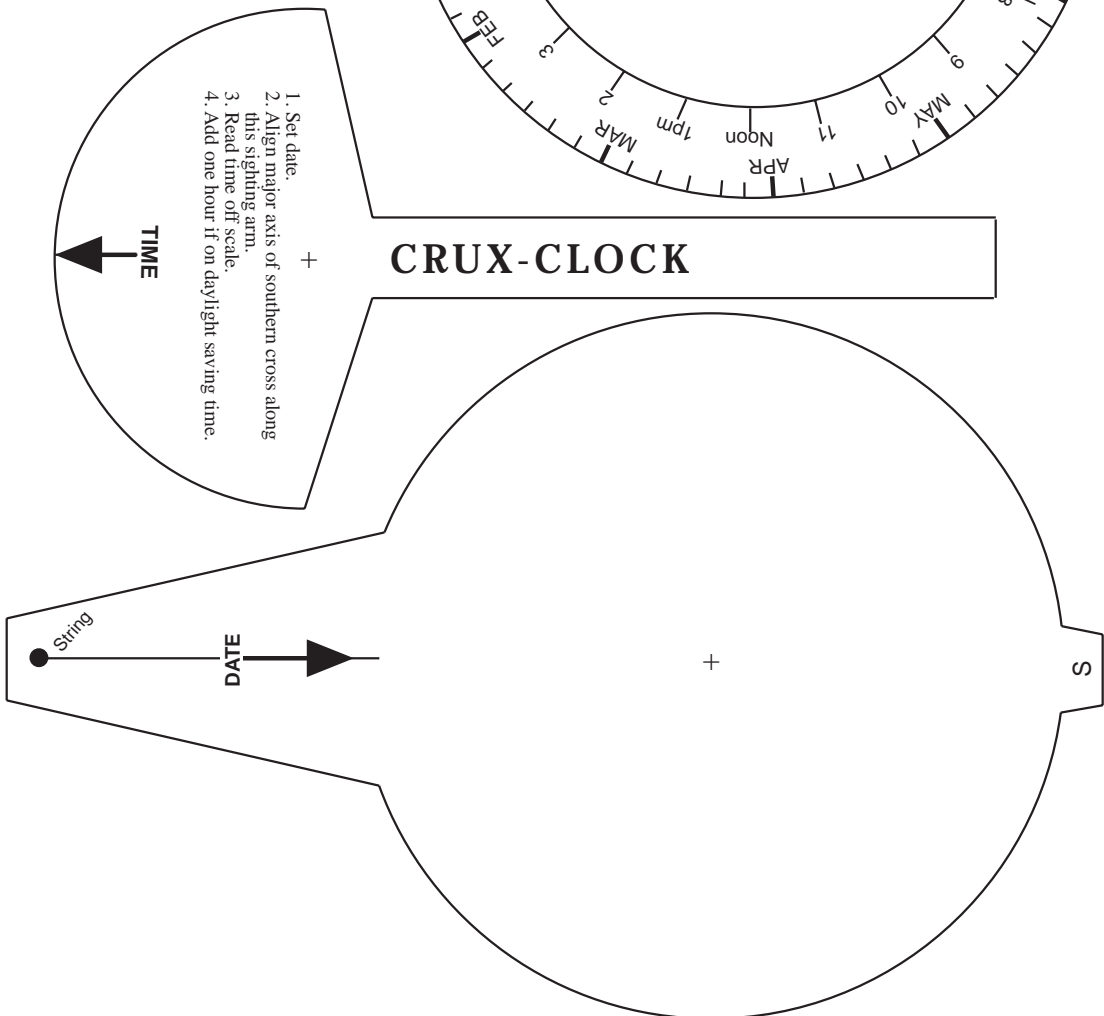
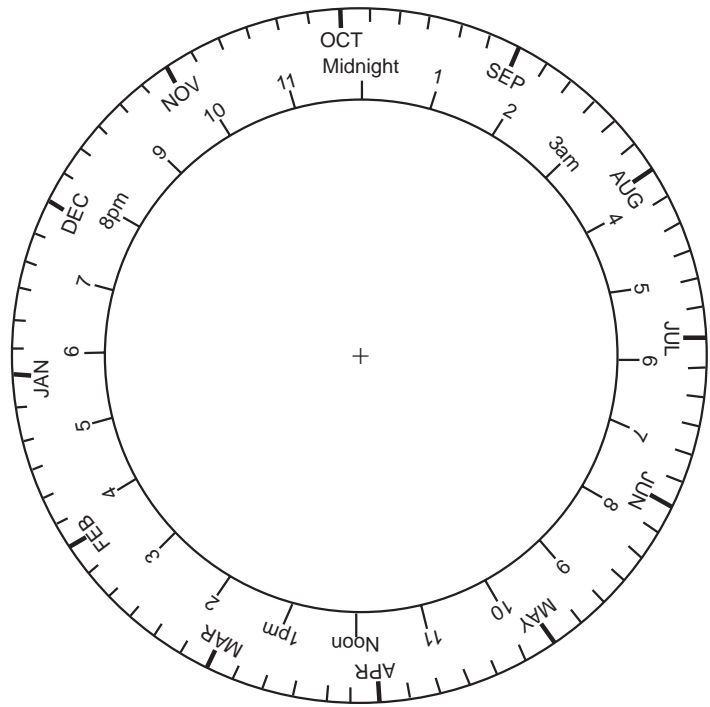
CRUX - CLOCK

(Pronounced 'Crooks' Clock)

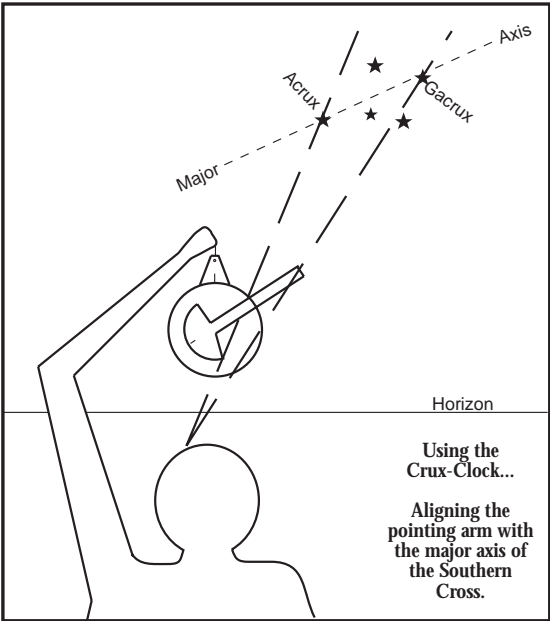
A device for telling the time of night from the Southern Cross.

Assembly Instructions

1. Photocopy this page.
2. Glue paper diagram to cardboard. A glue-stick works best.
3. Cut out the 3 solid components with a sharp "stanley knife".
4. Make a pin hole at the 3 places marked "X".
5. With the "S" plate on the bottom, the graduated circle in the middle and the pointing arm on top, push a pin through the 3 holes.
6. Push the pin through a piece of cork at the back to hold the 3 pieces firmly together.
7. Tie a loop of string through the hole indicated.



HOW TO USE THE CRUX-CLOCK



To Find the Time

1. Set the date by rotating the graduated wheel. It is a good idea at this stage to fix the wheel in place with a paper clip .
2. Hold the Crux-Clock at arms length by the string so that it hangs freely.
3. Face the Southern Cross and rotate the pointing arm so that it is parallel to the major axis of the Southern Cross. Gacrux should be the outermost star.
4. Read off the time.

Note: The pointing arm is obscured by the back plate when it is pointed directly up. In this case point the arm directly down and alter it to align it with the major axis of the Southern Cross. The resultant time will be 12 hours out. This will be obvious as the time will be a daylight time.



The Southern Cross can be used to tell time. The mental arithmetic is a bit daunting so I have included plans for a “Crux Clock” which you can make to do all the mathematics for you.



Learn to find the southern cross. It is a very useful group of stars and your overseas friends will expect you to be able to point it out.

To help you find other stars I recommend you buy a "Philips Planisphere" from a newsagent or book shop.

When it gets dark most people go inside and watch television, they end up knowing nothing about the night sky.

Generally stars rise in the east and “set” in the west, just the same as the sun does. If you go out at the same time each night, then as the months pass new stars rise in the east and old familiar ones go under the horizon and are not seen for the rest of the year. Eventually the original group of stars are back in the same position as in the previous year.

Generally in the summer months the group of stars known as Orion dominates the night sky. Scorpio takes over in the winter and Pegasus in the late winter and Spring. Orion and Scorpio are very distinctive constellations and you should take the trouble to find them and get acquainted.

The night sky is a friendly place when you know the names of some of the stars. It is like walking into a room where you know most of the people, as distinct from knowing nobody. As you get to know the stars better you will find that they have personalities. Most are white but some glow reddish and others blue. Some are loud and showy others shy and hard to locate. Some are loners and others hang around in a group. Some are there every night and others only visit at a particular time of year.

ASTROLABE

(An astronomical instrument for measuring the altitude of stars.)

This instrument measures the angle of elevation, of a body.

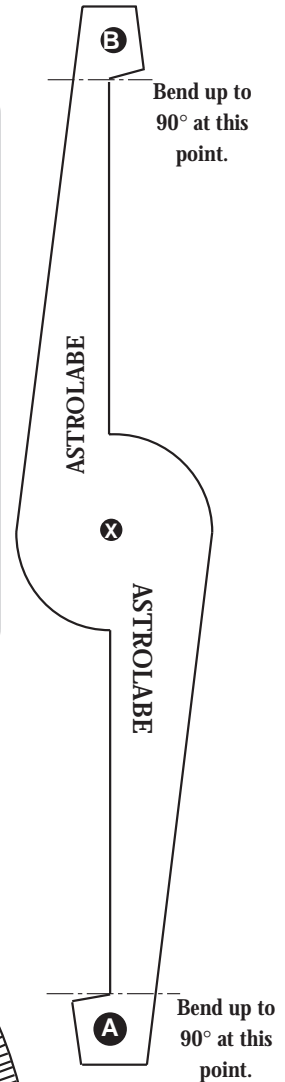
Assembly instructions:

1. Photocopy this page.
2. Glue the photocopy to cardboard using a glue stick.
3. Cut out the 2 shapes.
4. Cut a hole at points "A" and "B".
5. Bend up the sighting vanes to 90°.
6. Push a pin through both points marked "X". Hold the pin in place by pushing it onto a cork. The sighting vane should now be free to rotate over the graduated circle.
7. Punch a small hole in the rim of the astrolabe and suspend it from a loop of string.

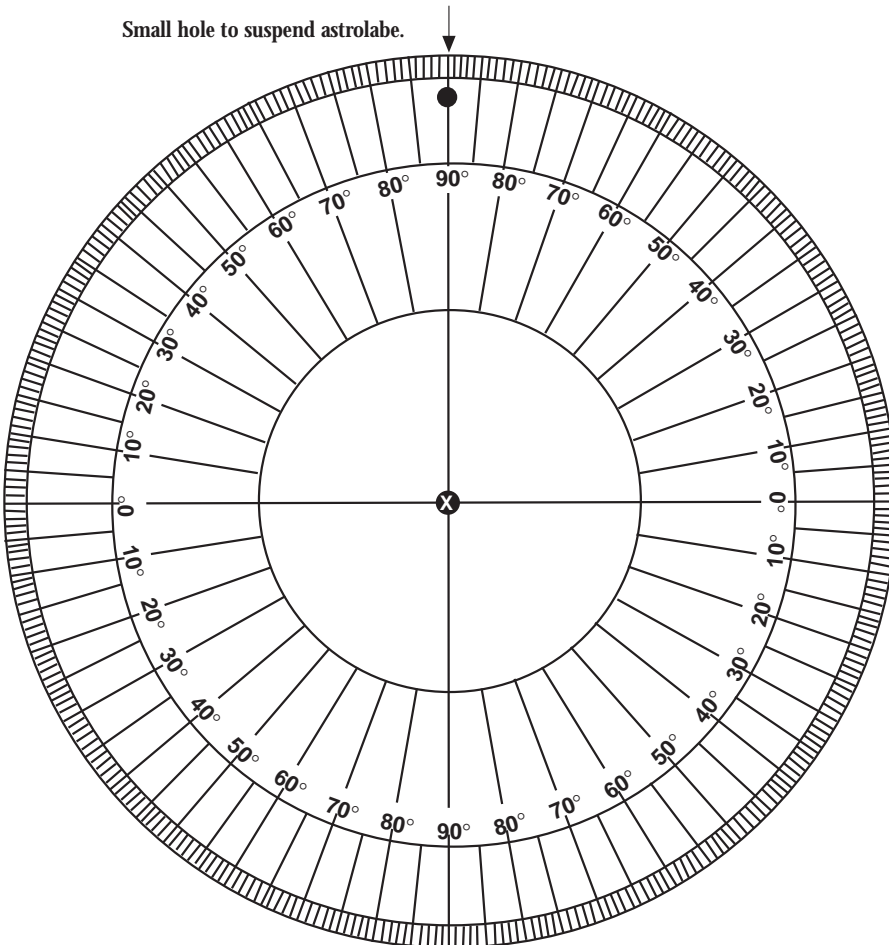
HOW TO USE THE ASTROLABE.

To locate a star:

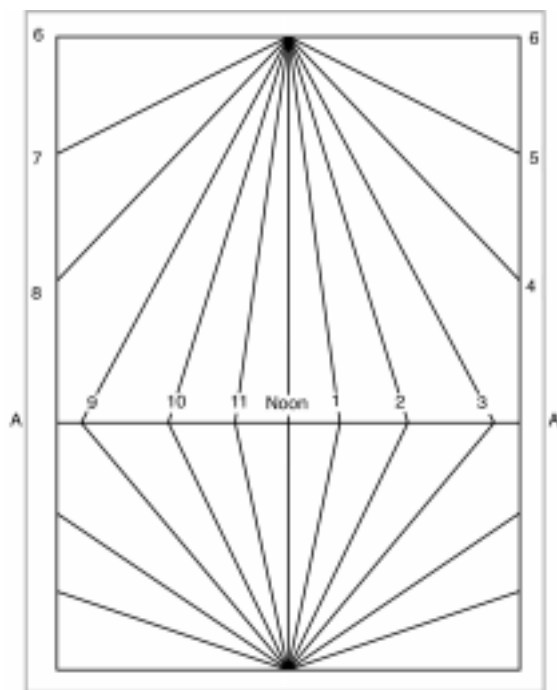
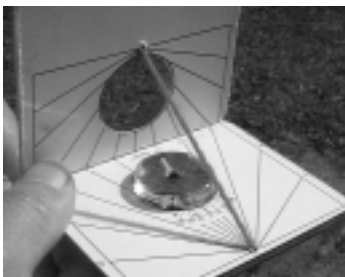
1. Using a magnetic compass face the direction of the star. (If using a "Silva" type compass this can be done by setting the predicted bearing on the compass, then turn around until the magnetic needle hovers above the compasses' north point). You will now be facing the star.
2. To determine how high the star is, set the predicted elevation on the astrolabe.
3. Hold the astrolabe by the string so that it hangs freely.
4. The star will appear through the holes in the sighting arm.



Small hole to suspend astrolabe.



Make a sundial. Photocopy the template below. Cut out the area inside the grey rectangle. Mount on a backing that will keep it rigid. Fold along the line A-A. The plate with the numbers has to be level, with the noon line pointing true north (compass bearing 168°). The back plate is to be at right angles to the base plate. Stretch a string between the two points where the lines intersect. The sun will then cast a shadow, indicating local time. This sundial is made for latitude 33° south. Used with a compass it can be portable.



Make a Planisphere

(Planisphere, a map of the celestial sphere with a device for indicating the part visible at a given time). Use this planisphere to help locate and identify some of the brightest stars and constellations.

Notice the following. Achernar, Canopus and the South Celestial Pole form an equilateral triangle. The southern Cross points both to the South Celestial Pole in one direction and Corvus in the opposite direction. The



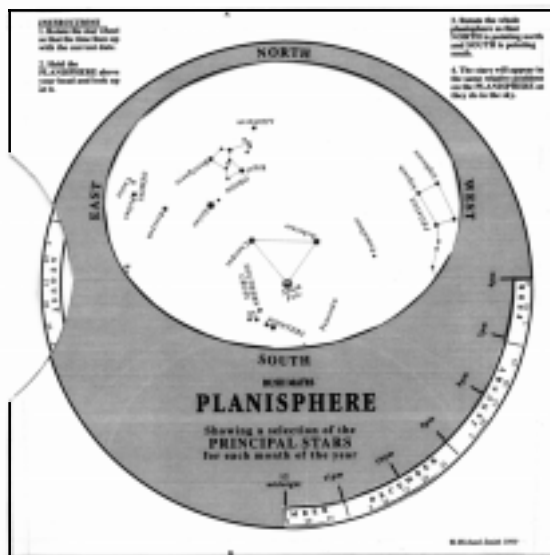
How to assemble your Planisphere

Pointers point to the top of the Southern Cross. The South Celestial Pole is mid way between the Southern Cross and Achernar. The kit consists of 3 parts, the top piece, the star wheel and the back piece.

Photocopy the kit on the next 3 pages. Glue the photocopied pages on to thin cardboard. Trim and cut each page according to the instructions on that page. Don't forget to cut out all the windows in the top piece. Make a pin hole in the centre of both the "star wheel" and the "back piece". Push a pin through these two holes and keep the pin in place with a piece of cork at the back. The wheel should be able to rotate easily.

With sticky tape, join the top piece to the back piece by lining up the A on the back piece with the A on the top piece and taping over the edge. The B on the back piece should align with the B on the top piece. You should end up with the star wheel inside a pocket. Tape up the remaining edges, leaving the exposed portion of the star wheel free to rotate.

Wait until dark.



Cut out this square and discard the rest



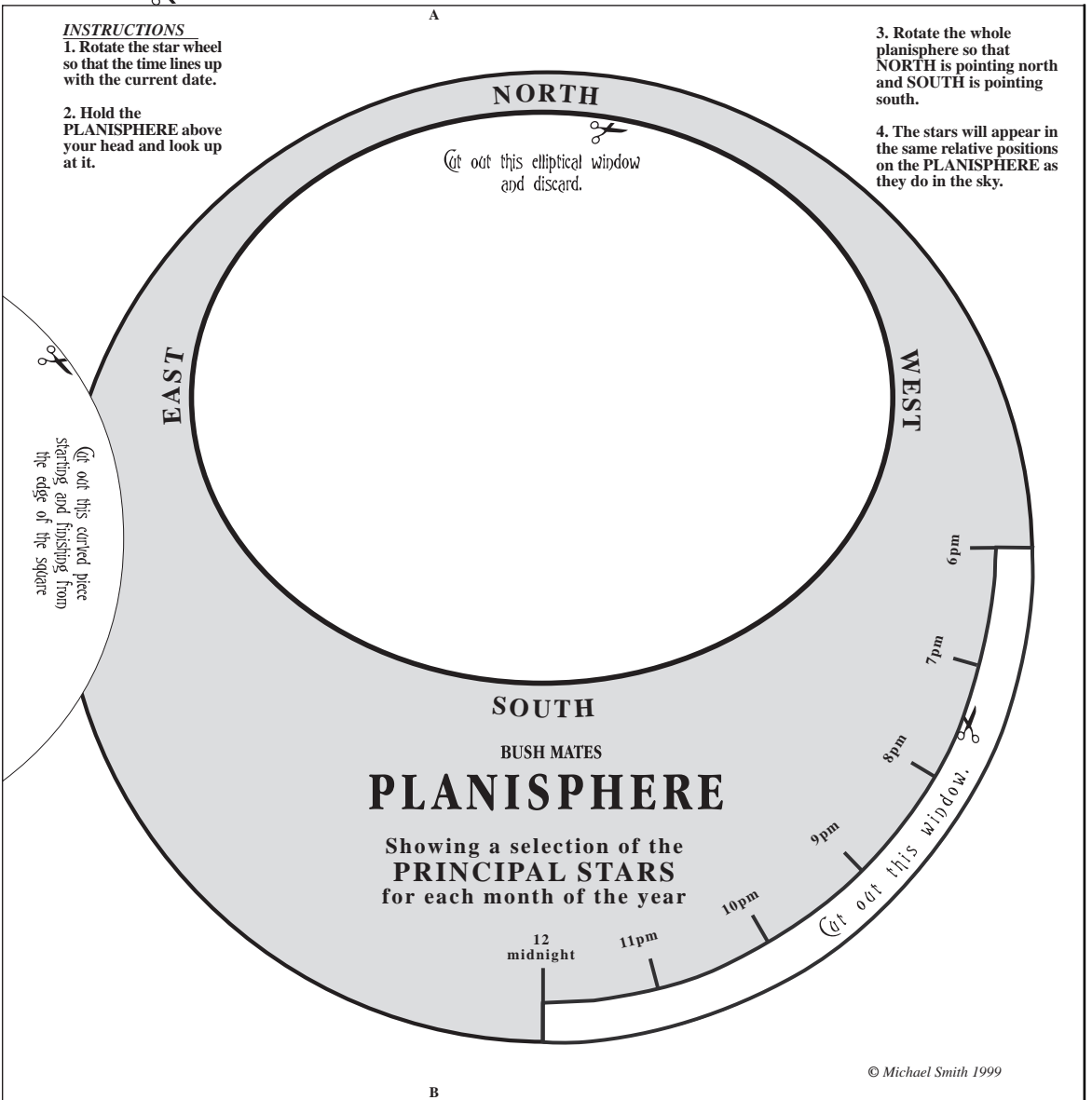
INSTRUCTIONS

1. Rotate the star wheel so that the time lines up with the current date.

2. Hold the PLANISPHERE above your head and look up at it.

3. Rotate the whole planisphere so that NORTH is pointing north and SOUTH is pointing south.

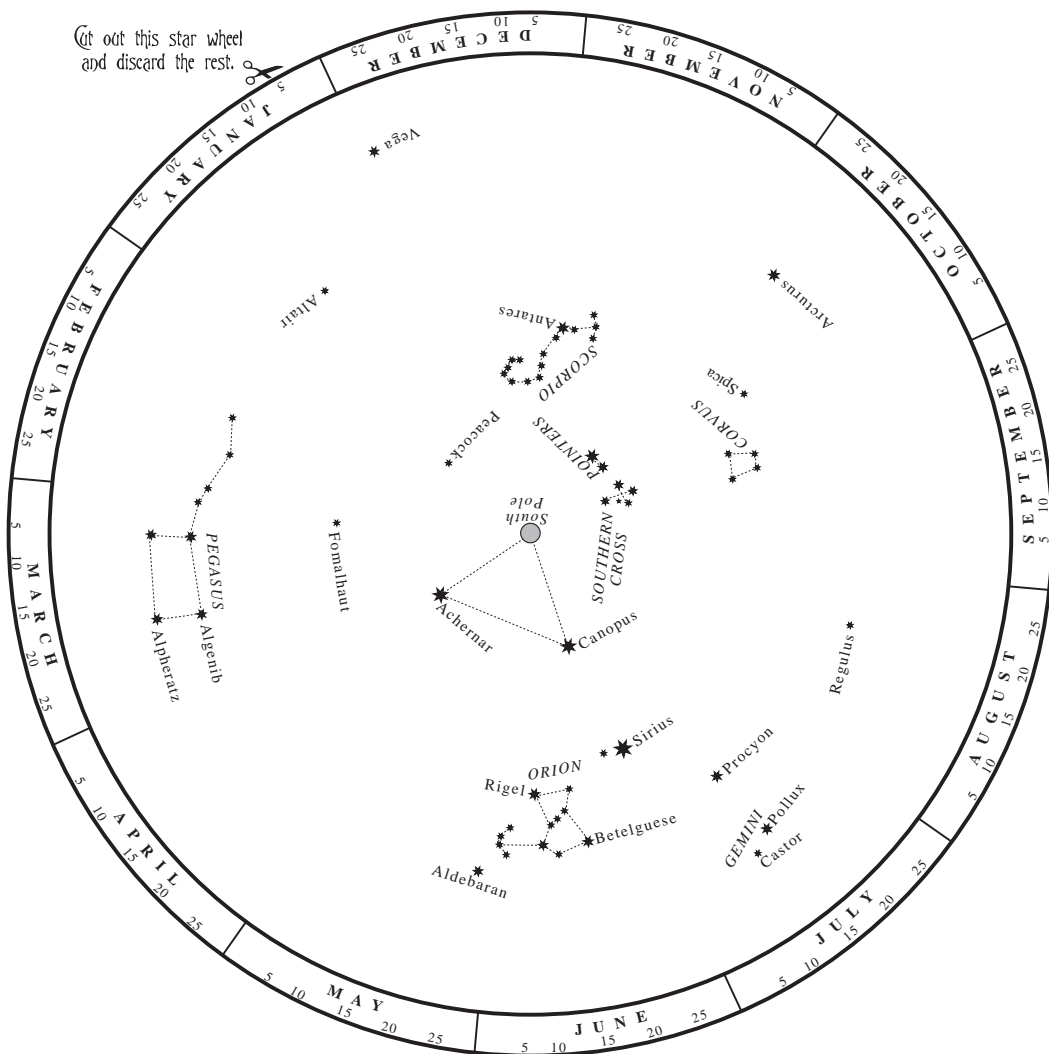
4. The stars will appear in the same relative positions on the PLANISPHERE as they do in the sky.



© Michael Smith 1999



Cut out this star wheel
and discard the rest.



PLANISPHERE



© Michael Smith 1999

Cut along this line from one edge of the page to the other, and discard the top portion.



A



Cut out this curved piece starting and finishing from the edge of the square

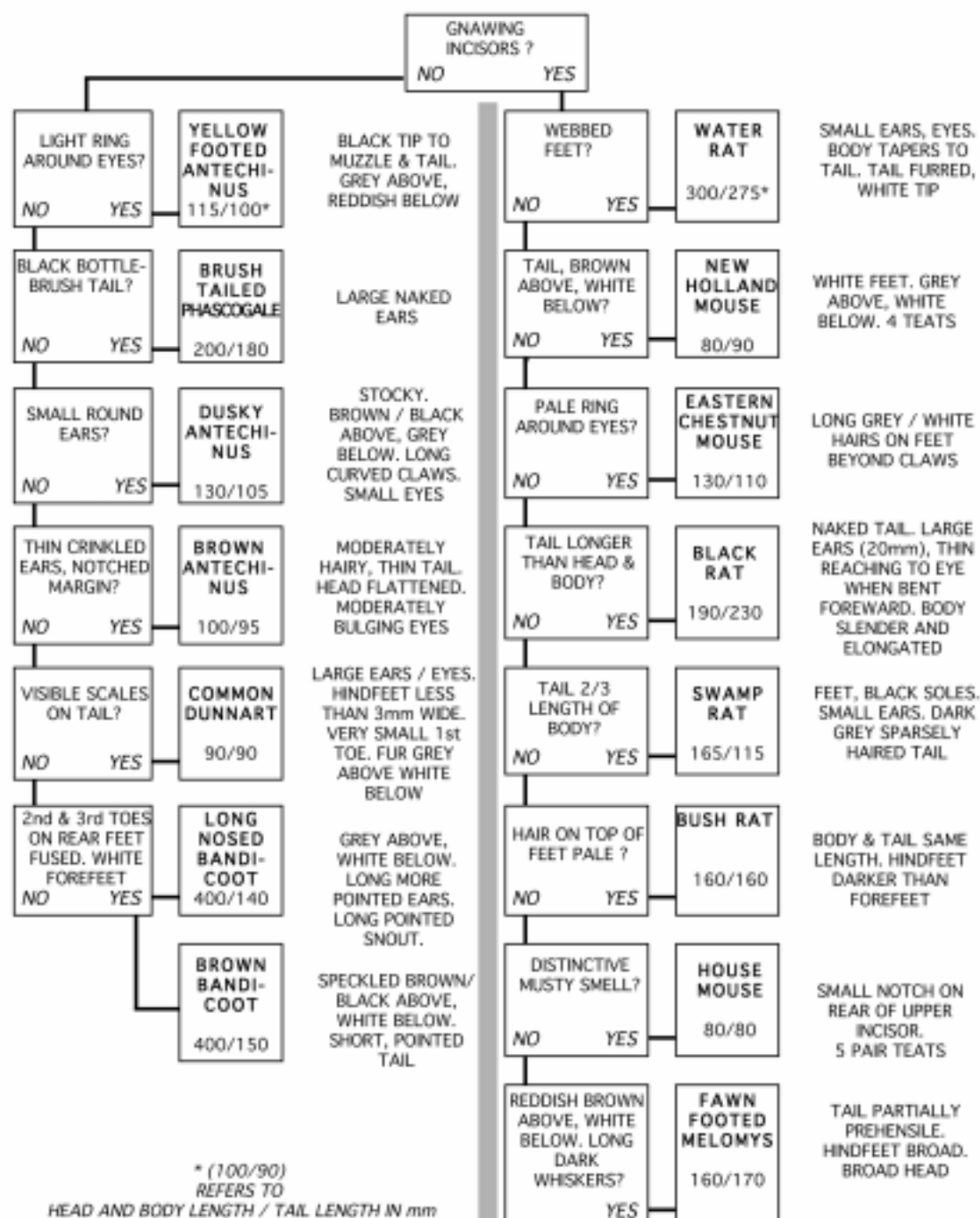


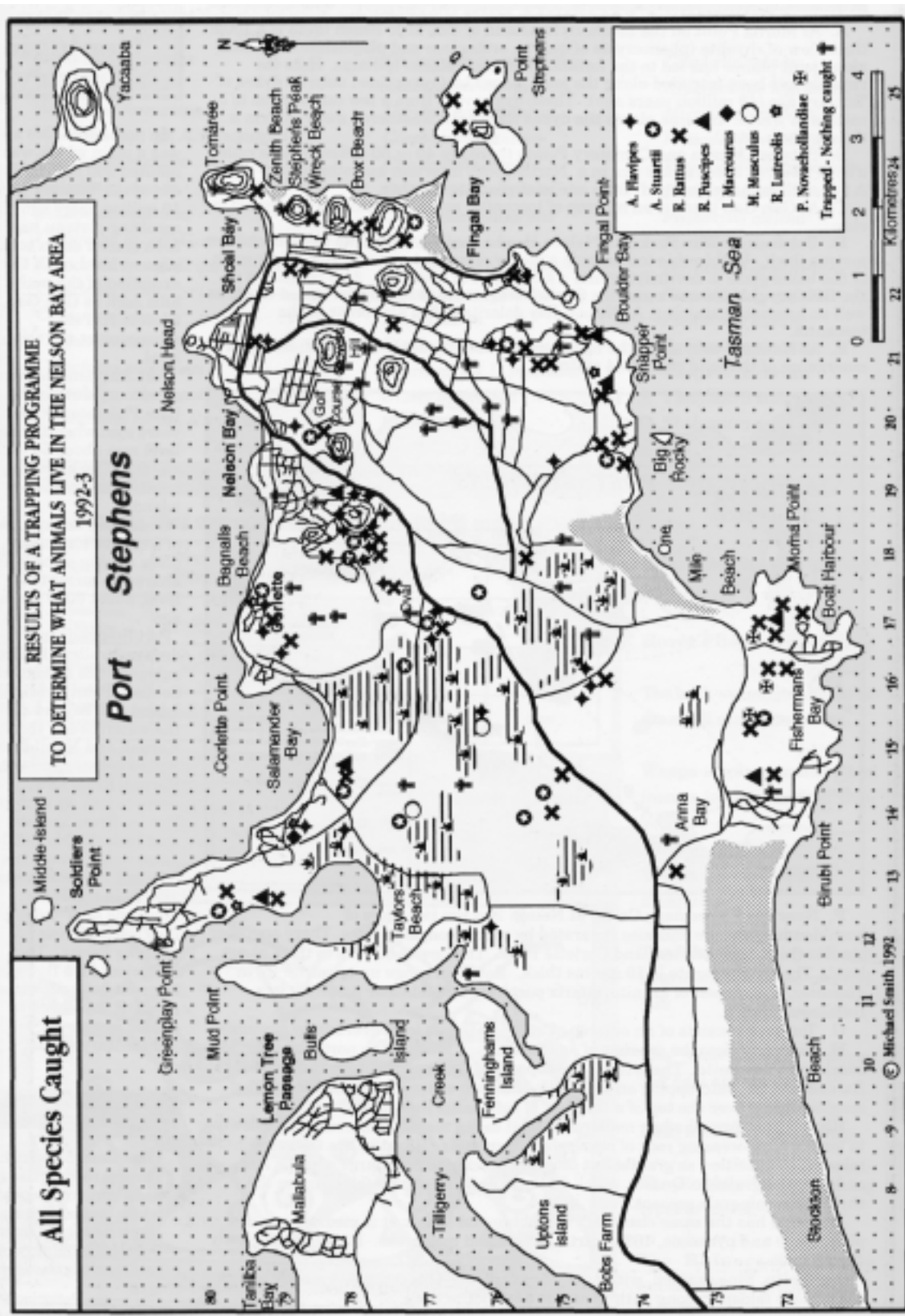
B



© Michael Smith 1999

FLOW CHART
TO HELP IDENTIFY
MICE, RATS and BANDICOOTS
THAT MIGHT BE FOUND IN THE
NELSON BAY AREA





Mammal list for The Tomaree Peninsula

- E Expected
- S Sighted, recorded
- R Rare
- O Other record
- * Introduced

Results of a Live-Trapping Survey 1992-3:

A total of 206 animals were caught
over 2210 trap/nights giving a
trapping success of 9.4%.

The species caught were:

*Scientific Name,
Common name
and Number caught.*

Rattus rattus

Black Rat, 66

Antechinus flavipes

Yellow Footed Antechinus, 51

Antechinus stuartii

Brown Antechinus, 42

Rattus fuscipes

Bush Rat, 11

Rattus lutreolus

Swamp Rat, 11

Mus musculus

House Mouse, 9

Pseudomys novaehollandiae

New Holland Mouse, 9

Trichosurus vulpecula

Common Brushtail Possum, 4

Isodon macrourus

Northern Brown Bandicoot, 3

Short-beaked echidna	Tachyglossus aculeatus.....	S
Brown antechinus	Antechinus stuartii	S
Yellow-Footed antechinus	Antechinus flavipes	S
Dusky antechinus	Antechinus swainsonii	E
Brush-tailed phascogale	Phascogale tapoatafa	E
Common dunnart	Sminthopsis murina	E
Greater brown bandicoot	Isodon macrourus	S
Long-nosed bandicoot	Perameles nasuta	E
Common brushtail (possum)	Trichosurus vulpecula	S
Feathertail glider	Acrobates pygmaeus	S
Eastern pygmy possum	Cercatus nanus	E
Yellow-bellied glider	Petaurus australis	E
Sugar glider	Petaurus breviceps	S
Common ringtail (possum)	Pseudocheirus peregrinus	S
Greater glider	Petauroides volans	E
Eastern grey kangaroo	Macropus giganteus	S
Red-necked wallaby	Macropus rufogriseus	S
Swamp wallaby	Wallabia bicolor	S
Koala	Phascolarctos cinereus	S
Wombat	Wombatus ursinus	S
Australian water rat	Hydromys chrysogaster	E
Fawn footed melomys	Melomys cervinipes	E
House mouse *	Mus musculus	S
Eastern chestnut mouse	Pseudomys gracilicaudatus	E
New Holland mouse	Pseudomys novaehollandiae ...	S
Bush rat	Rattus fuscipes	S
Swamp rat	Rattus lutreolus	S
Black rat*	Rattus rattus	S
Brown Hare*	Lepus capensis	S
Feral Pig*	Sus srofa	S
Dingo	Canis familiaris	S
Fox*	Vulpes vulpes	S
Cat*	Felis catus	S
Cattle*	Bos taurus	S
European rabbit*	Oryctolagus cuniculus	S
Grey-headed fruit-bat	Pteropus poliocephalus	S
Little red fruit-bat	Pteropus scapulatus	E
Eastern horseshoe-bat	Rhinolophus megaphyllus	E
Norfolk Island mastiff-bat	Tardarida norfolkensis	E
Eastern horseshoe-bat	Rhinolophus megaphyllus	E
Chocolate wattled bat	Chalinolobus morio	E
Little cave eptesicus	Elptesicus pumilus	E
Little forest eptesicus	Elptesicus vulturinus	E
Common bent-wing bat	Miniopterus schreibersii	E
Eastern broad-nosed bat	Nycticeius orion	E
Greater-broad-nosed bat	Nycticeius rueppellii	E
Gould's long-eared bat	Nycticeius gouldii	E
Great pipistrelle	Pipistrellus tasmaniensis	E
Australian fur seal	Arctocephalus pusillus	S

Frogs

There are 3700 different species of frogs in the world. Australia has at least 192 species, and Nelson Bay about 21 species. Most people in Nelson Bay live close to fresh water swamps and will be visited by a range of species. Around your house frogs may be living in the trees, in the septic tank, up drainpipes and under rocks. There may be one in your letterbox right now.

As you drive around on rainy nights frogs can be seen hopping across the road. You don't have to wait for frogs to come to you. Go out and collect frog spawn (eggs) or tadpoles and see what develops. Put the tadpoles in a plastic bucket or glass aquarium together with pond water. Chlorinated tap water will kill tadpoles. You can feed them on tropical fish food or boiled lettuce leaves. Once the tadpoles develop into frogs they will be difficult to contain. This is the time to return



Green and golden bell frog

them to their original environment. No childhood would be complete without some involvement with tadpoles.

Whilst June is our wettest month it is the warm wet weather of spring that encourages frogs to look for partners. Frogs are amphibians, cold blooded vertebrates whose young live in water and breathe through gills and as adults use lungs to breathe air. Frogs have loud voices to attract the opposite sex and this also helps their enemies find them.

Frogs are eaten by birds, snakes, lizards, tortoises, fish, cats, dogs and foxes. Some frogs swell up to an abnormal size when seized by an enemy to avoid being swallowed. Frogs live on grubs and beetles. They are harmless friends. The presence of lots of species of frogs is a good indicator of a healthy environment. They are one of the first species to die off when water becomes polluted.

Frogs that have been observed on the Tomaree Peninsula.

Spotted grass frog

Brown-striped frog

Northern dwarf tree frog

Green and golden bell frog

Ewing's tree frog

Dainty tree frog

Rocket frog

Perons tree frog

Green tree frog

Bleating tree frog

Eastern Dwarf tree frog

Freycinet's frog

Lesueur's frog

Eastern pobblebonk

Ornate burrowing frog

Striped marsh frog

Haswells frog

Brown toadlet

Red backed toadlet

Common eastern froglet

Limnodynastes tasmaniensis

Limnodynastes peronii

Litoria bicolor

Litoria aurea

Litoria ewingii

Litoria gracilentia

Litoria nasuta

Litoria peronii

Litoria caerulea

Litoria dentata

Litoria fallax

Litoria freycineti

Litoria latopalmata

Litoria lesueurii

Limnodynastes dumerilii grayi

Limnodynastes ornatus

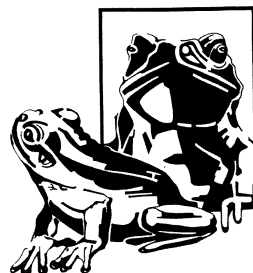
Limnodynastes peronii

Paracrinia haswelli

Pseudophryne bibrowii

Pseudophryne coriacea

Ranidella signifera

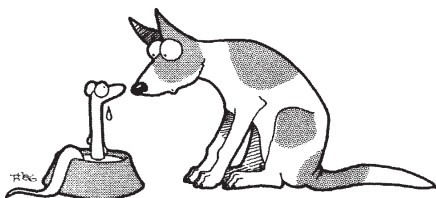


Reptiles and amphibians of the Tomaree Peninsula

Any snake seen crossing your yard will be just passing through. There is little in a back yard to interest them. Most snake bites occur when people attempt to kill them. Snakes are sensitive to ground vibrations, so to avoid a confrontation stomp as you make your way through the bush. Snakes track their prey by scent. They flick their tongues out to sample the air which they carry to the sensory organs on the roof of the mouth, for analysis. Snakes don't have particularly good vision or hearing.

Snakes need to shed their skins. If this is about to happen a snake loses its bright colours and will look milky. They choose to hide for a while because even the eye scales cloud over and they can't see properly. After a week or two the snake will rub against something hard and the skin will shed, inside out. By examining the scale pattern on the skin the species can be identified.

Snakes hunt by day and night, depending on the weather. They will attack and eat anything they think they can swallow. Where there are frogs there will be snakes hunting them. While walking along fire-trails around swamps watch out for frogs and lizards that run across the track, they should be running away from you, and are possibly being pursued by a snake. Green Hill is reputed to be the "snakiest" place in the Bay. Rocky hills such as Gan Gan and Kurrara are perfect snake habitat.



ACT Parks and Conservation Service

Eastern snake-necked turtle
Bearded dragon
Jacky lizard
Dwarf crowned skink

Fence skink

Striped skink
Copper tailed skink
Wood gecko
Southern leaf-tailed gecko
Barred-sided skink
Eastern water skink
Land mullet
Black rock skink
White's skink
Stephen's banded snake
Grass skink
Garden skink

Burton's snake lizard
Lesueur's velvet gecko
Diamond python
Southern death adder
Yellow-faced whip snake
Marsh snake
Yellow bellied sea snake
Red bellied black snake.
Eastern brown snake
Eastern water skink
Eastern blue-tongued lizard
Bandy bandy
Lace monitor goanna

Chelodina longicollis
Amphibolurus barbatus
Amphibolurus muricatus
Cacophis krefftii
Cryptoblepharis boutonii
Cryptoblepharus virgatus
Cryptophis nigrescens
Ctenotus robustus
Ctenotus taeniolatus
Diplodactylus vittatus
Phyllurus platurus
Eulamprus tenuis
Eulamprus quoyii
Egernia major
Egernia saxatilis
Egernia whittii
Hoplocephalus stephensii
Lampropholis delicata
Lampropholis quichenoti
Leiopholis
Lialis burtonis
Oedura leseurii
Morelia spilota spilota
Acanthophis antarcticus
Demansia psammophis
Hemiaspis signata
Pelamis platurus
Pseudechis porphyriacus
Pseudonaja textilis
Sphenomorphus quoyii
Tiliqua scincoides
Vermicella annulata
Varanus varius

BENEFICIAL INSECTS

Carab Beetles feed on insect larvae.

Hover Flies destroy Aphids.

The back-swimmer and Boatman kill mosquito larvae.

Wasps store caterpillars and insects in cells to feed their young.

The Dragon Fly kills mosquitos.

The Ichneumon lays its eggs in grasshoppers and caterpillars.

The "Golden Eye" Lacewing eats aphids.

Ladybirds eat mealy bugs.

The Robber Fly kills many types of insect.

The Rhinoceros Beetle buries animal droppings.

BUSH TUCKER

Oysters can be collected below the high tide mark. Make sure they are not on an oyster lease owned by somebody. Contact the Fisheries Inspector for the location of Public Oyster Leases. Shellfish concentrate any pollutants in the water. If in doubt, cooking kills most bacteria.

Pipis. Most of our beaches have pipis. Stockton Beach has millions of them. You are not permitted to use any implement to collect them. Wriggle your toes into the sand, especially at low tide. They are good in soups or can be cooked in the coals of a fire until they open. There is always a bit of sand in the pipi shell.

Cockles are found in tidal mud or sand. You can feel them underfoot. Soak cockles for several hours in a bowl of clean salted water, having first washed off any clinging mud and sand. They will filter the water through their shells, getting rid of sand and waste matter. Boil them in water till their shells open. The meat is a bit chewy.

Fish contain lots of tasty protein. They can be caught with nets, traps, hook, line, and lure. In Aboriginal hunter-gatherer times, fish, in pools and waterholes, could be "poisoned" by pounding up the leaves of Sydney Wattle *Acacia longifolia*, or the roots of Australian Indigo, *Indigofera australis*. Fish would float to the surface and could be safely eaten. The poison prevented fish from taking up oxygen from the water, and they suffocated.

Limpets, whelks, marine snails and winkles can also be found in sand, weed beds and rock pools. They are edible.

Freshwater Crayfish can be found in the rocky rapids of freshwater rivers flowing into Port Stephens. Yabbies can be found in any permanent fresh water, even if it is only a few centimeters deep.

Mud Crabs can be caught in traps or probed for in the mud. Blue Swimmer Crabs can be caught in "witches hats", traps, or on a hooked line. Probe the sand at low tide with a crab spear between the weeds. Walk about in thigh deep water over weed beds and watch them scatter.

Mangrove Worms. With an axe chop open the dead wood found in clumps of mangroves. The worms are up to 30cm long. They can be eaten raw or cooked.

Freshwater swamps are home to many edible species of bird, duck, turtles and snake. Being native animals they are all protected. Turtles are the most easily caught and come in their own cooking container.

Grubs. Generally all grubs that look fat, white and edible that are found inside live trees and bushes can be eaten. Witchetty grubs can be chopped out of the roots of wattle trees. A length of wire with a hook at the end is useful for getting them out. White fellows prefer them cooked.



Animals. Nelson Bay still has a small population of koalas, wallaby, possums, echidnas and bandicoots. It is better that you develop a taste for the feral cats, foxes and rabbits which greatly outnumber them.

Honey. While gazing above, you may see what appears to be a swarm of flies in a tree. If they are flying in and out of a tree hollow then you are probably looking at a bee-hive. Honey can be taken from the hive by scaling the tree and chopping out the honeycomb. If the bees are your common domestic variety then leave the nest alone. You may be stung to death. Native bees are much smaller and do not sting.

Gum exudes from cuts in the bark of wattle trees. The lighter coloured gums are the better tasting. Many gums are too astringent to eat due to the tannin content.



ACT Parks and Conservation Service

FOOD PLANTS OF NELSON BAY.

Apple berry, *Billardiera scandens* Eat the flesh inside the seed case. Discard the seeds.

Blackfellows orange, *Eustrephus latifolius*. The thin white flesh surrounding the seed is edible. Tubers on the roots are eaten raw.

Bluebells, *Whalenbergia*, have edible flowers.

Bracken fern, *Pteridium esculentum*. A type of bread can be made from the rhizomes which are swollen underground stems. They are beaten into a paste with a stone and roasted in hot ashes.

Bulrush, *Typha* species. During spring and summer the young shoots are pulled up and eaten raw.

Coast beard heath, *Leucopogon parviflorus*, the white fruit is edible. Discard the seeds.

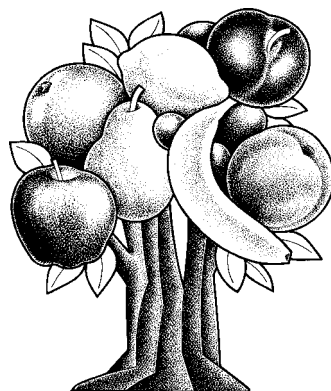
Cranberry heath, *Astroloma humifusum*, a greenish fruit with a sweet pulp.

Fivecorners, *Styphelia leata*, the fruit is a five-cornered edible berry.

Fringed violet, *Thysanotus tuberosus*, has an edible tuberous root.

Grass tree, *Xanthorrhoea*, soft white bases of the leaves can be eaten.

Ground orchids. The following orchids have a pea-to-marble sized tuber which is edible. The flavour is floury, crunchy and watery. Flying duck orchid *Caleana major*, red beard orchid *Calochilus paludosus*, veined spider orchid *Caladenia reticulata*, greenhood *Pterostylis nutans*, sulphur donkey orchid *Diuris sulphurea*, donkey orchid *Diuris punctata*, red beak orchid *Lyperanthus nigricans*, pink fingers *Caladenia carnea*, white fingers *Caladenia alba*,



blue fingers *Caladenia caerulea*, scented sun orchid *Thelymitra aristata*, common onion orchid *Microtis unifolia*, tall leek orchid *Prasophyllum elatum*, austral ladys tresses *Spiranthes sinensis*, pixie caps *Acianthus fornicatus*, hyacinth orchid *Dipodium punctatum*, *Diuris citrina*, large waxlip *Glossodia minor*, brown beak orchid *Lyperanthus suaveolens*, mayfly orchid *Acianthus caudatus*, leek orchid *Prasophyllum*.

Gymea Lily, *Dorantes excelsa*, flowering stems are roasted and eaten when they are 0.5m high. Roots are roasted and made into a cake which is eaten cold.

Hovea linearis, young pods are eaten.

Kangaroo apple, *Solanum aviculare*, ripe fruits are tolerable after cooking.

Milkmaids, *Burchardia umbellata*, have edible roots.

Nighshade, *Solanum vescum*, has an edible fruit.

Pigface, *Carpobrotus glaucescens*, edible fruit

Purple violet, *Viola betonicifolia*, flowers and leaves can be used in a salad.

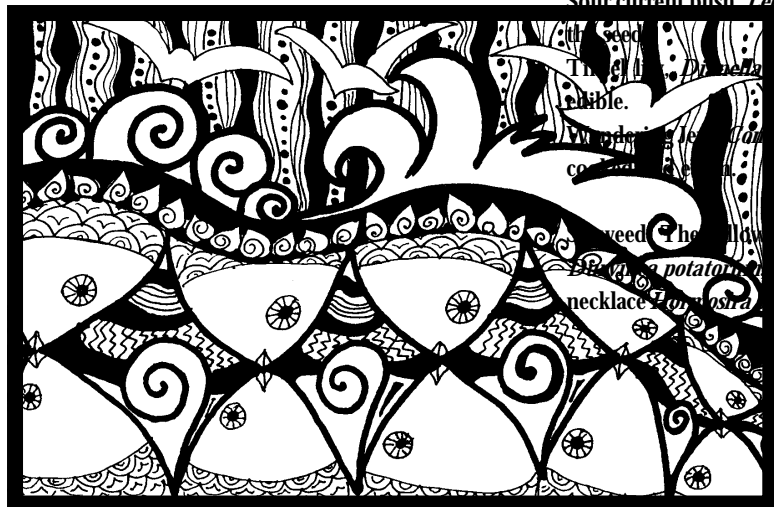
Scrambling lily, *Geitonoplesium cymosum*, has edible shoots.

Sour current bush, *Leptomeria acida*, eat the flesh around

the seed. The fruit of *Dorantes excelsa*, blueberries and roots are edible.

Young shoots of *Campanula cyanea*, young shoots can be cooked.

The following seaweeds are edible. Bull kelp, *Macrocystis pyramidea*, Sea lettuce *Ulva lactuca*, Neptunes necklace *Cladophora nanksii*, brown kelp *Ecklonia radiata*.



Native brews were a common standby in early Australia when the "real thing" from China ran out. Alternative teas are now big business and native plants are being tried once again by those with less conservative palates. Many Australian species make good drinks, they are caffeine free and cost nothing to collect and prepare.

Fresh or dried, the leaves of the following plants can be infused in boiling water to make tea. The resulting liquid is usually clear and slightly aromatic. The novice can mix in a pinch of ordinary tea to improve the flavour. More flavour is released if the leaves are crushed before infusion. Leaves can be put in a cup, and boiling water added, alternatively leaves can be put in a billy of boiling water and boiled for a further minute. Counting the number of leaves and measuring the volume of water will allow you to remember the recipe for a successful brew or adjust the strength for next time. Six leaves per cup is a good starting point if the leaves are big. For small leaf varieties a sprig about 3cm long will do.

Proper identification of the plants is important and requires more space than is available here. I recommend the following books, "Wild Food in Australia" A.B. and J.W. Cribb, Fontana, or "Wild Food Plants of Australia" by Tim Low, Angus and Robertson.

I hope you find amongst these plants some pleasant surprises.

Leptospermum. These are generally known as tea-trees either because of their use in the early days as a tea substitute or because of the colour of the water in which they generally grow. By smelling the crushed leaves you will have some idea of what the tea will taste like. The flowers all have 5 rounded petals.

L. flavescens, yellow tea tree

L. liversidgei, swamp May, an excellent lemon scented brew, this is far and away the best native tea to be had in the area. Essential oils are distilled from this plant.

L. laevigatum, coast tea tree, also a bush medicine for urinary complaints.

Melaleuca, also called tea trees. They have bottle-brush flower spikes.

M. armillaris, honey myrtle.

M. nodosa, prickly-leaved paper bark.

M. thymifolia, has showy purple flowers rich in nectar. Essential oils such as eucalyptus oil can be distilled from the leaves.

M. quinquenervia, broad leafed paperbark, the best melaleuca for tea making. New leaves can be chewed for head colds.

Acacia suaveolens, is the only one of the 800 species of

wattle documented as a tea. It makes a pale brew, sweetish, and not unpleasant, but a bit grassy in flavour. Many acacias are poisonous and this is not a genus to experiment with.

Baeckea virgata, a pleasant drink with a good aroma.

Callistemon citrinus, crimson bottlebrush. You probably already have one in your garden. One of the best herbal teas, it has a flavour like apples. Other callistemons make good lemony teas.

Smilax glyciphylla, native sarsaparilla, a climbing plant with leaves full of flavour. Produces a bitter-sweet tea. One leaf per cup only.

Hardenbergia violacea, false sarsaparilla. This trailing plant has purple pea flowers that look like little faces peering up at you from the bush. The leaves have a lot of flavour in them. Give them a chew and see if you like it.

Kennedia. Trailing plants with a handsome red pea flower.

K. prostrata, running postman, has a brilliant scarlet flower with a yellow centre. Leaves are in clusters of three. It makes good tea but unless you find a lot of them in a patch it is better for the plant if you pass it by, as it is not very common.

K. rubicundra, dusky coral pea is widespread. The dark red pea flower resembles the Sturts desert pea.

Nectar.

Bush teas are always taken black (definitely no milk). They can be sweetened with sugar or nectar from native plants. The activity of bees will indicate which flowers still contain nectar. I have found by dunking about 6 of the bottlebrush flowers of *Melaleuca quinquenervia* (there is no need to pick them) in a cup of cold water, that will equal a teaspoon of sugar. The water can be strained to remove flower parts and insects that have been enjoying the nectar. The water is boiled and tea added.

The following plants have nectar-rich flowers.

Banksias New flowers are generally nectar rich. You have to beat the bees, insects, and birds to them.

Eucalyptus. Our bloodwood *E. gummifera* has huge clusters of flowers rich in nectar. As with the other gums, scoop out the flowers to see how much and how good the nectar is.

Melaleuca. Suck these bottlebrush flowers, they taste as though they have been soaked in honey.

Xanthorrhoea, blackboy, grass tree. The flowering spike is covered in small white flowers. Wrap your thumb and index finger around the bottom of the stalk and squeezing gently, run your fingers up. Your hand will be running with nectar. Watch out for bees.

Fragrant Flowers. Every flower is worth a sniff and some a taste. Some of our better performers are: *Sowerbaea juncea* vanilla plant (chocolate/caramel fragrance), *Acacia suaveolens* sweet wattle, *Boronia heterophylla*, *Indigofera Australis* austral indigo, *Woolsia pungens* and *Melaleuca quinquenervia*, dripping with nectar and smelling of honey.

Dye colours from native plants. Natural dyes fade in time and it is recommended that the cloth or yarn be treated with a mordant prior to dying (alum, chrome, iron or tin). Foliage of the following plants can be boiled in water for an hour. As a rule of thumb 50g of leaves per litre of water for 25g of yarn or fabric. Local species to try are *Acacia longifolia* Sydney golden wattle (dull yellow), *Banksia integrifolia* coast banksia (lemon-yellow), *Eucalyptus nicholii* narrow-leaved peppermint (orange-red), *Leptospermum laevigatum* coast tea-tree (yellow-brown), *Pteridium esulentum* bracken fern (green, young fronds) and *Hardenbergia violacea*.

Fragrant foliage. While walking through the bush it is a source of stimulation and wonder to crush the leaves of various plants to enjoy the fragrance. All the Eucalypts, bottlebrushes and tea trees are worth a try. Some of our native plants worthy of a sniff are: *Boronia saffrolifera* (sefrole), *Crowea exalata* (aniseed), *Eucalyptus nicholii* narrow-leaved peppermint (peppermint), *Prostanthera densa* (mint), *Callistemon citrinus* (lemon) and *Leptospermum liversidgei* (lemon and our best bush tea). This list is just a start. See how many more you can add to it.



Orchid Species of Tomaree and Tilligerry Peninsula

Acianthus caudatus
Acianthus exertus
Acianthus fornicatus
Acianthus sp. aff. *A. fornicatus*
Caladenia caerulea
Caladenia carnea
Caladenia catenata
Caladenia sp. aff. *C. carnea*
Caladenia sp. aff. *C. quadrifaria*
Caladenia picta
Caleana major
Caleana minor
Calochilus paludosus
Calochilus robertsonii
Chiloglottis sp. aff. *C. reflexa*
Chiloglottis trapeziformis
Chiloglottis sp. nov.
Corybas aconitiflorus
Corybas diemenicus
Cryptostylis erecta
Cryptostylis hunteriana
Cryptostylis subulata
Cryptostylis reniformis

Cymbidium suave
Dendrobium teretifolium
Dipodium varigatum
Diuris aurea
Diuris praecox
Diuris sp. aff. *D. punctata*
Diuris sulphurea
Glossodia major
Glossodia minor
Lyperanthus nigricans
Microtis parviflora
Prasophyllum elatum
Prasophyllum odoratum
Pterostylis acuminata
Pterostylis collina
Pterostylis erecta
Pterostylis grandiflora
Pterostylis longifolia
Pterostylis nutans
Spiranthes sinensis
Thelymitra carnea
Thelymitra ixioides
Thelymitra media

How this list was compiled.

Don McNair's book "Flora of Port Stephens and Myall Lakes Region New South Wales" lists about 650 plant species. Each of these species was looked up in the four books listed below, to see if any use for the plant was known. Thus only local species are dealt with.

CM... "Wild Medicine in Australia" by A.B. & J.W. Cribb, Fontana/Collins, 1986.

CU... "Useful Wild Plants in Australia" A.B. & J.W. Cribb, Fontana/Collins, 1984.

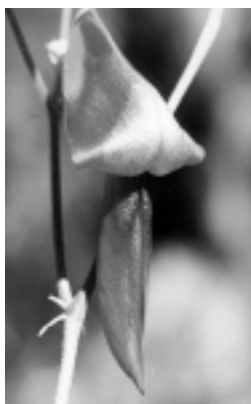
CF... "Wild Food in Australia" by A.B. & J.W. Cribb, Fontana/Collins, 1987.

IF... "Bush Food" by Jennifer Isaacs, Weldons, 1987.

LT... "Bush Tucker" by Tim Low, Angus & Robertson, 1989.

References such as *IF 27* refer the reader to page 27 of Jennifer Isaacs' book. If there is any doubt about the information, it can be looked up in that particular book.

All native plants are protected in National Parks. The Water Corporation specifically bans the collecting of flora in areas under its authority. The reality is that the welfare of every plant in Australia is controlled by somebody. You have to satisfy yourself that the plucking of a few leaves, or the removal of fruit, seeds or roots would not be objected to by the plant's guardian. The information in these notes is for your education and enlightenment only and should not be used as an excuse to unnecessarily destroy plants.



SCIENTIFIC NAME COMMON NAME

Acacia *Wattle species*
Bark used for a decoction for skin conditions such as boils and for venereal disease. Taken orally for diarrhoea during the day; pills made from bark, gum used night and morning. Gum mixed with wattle ash or bark used to treat wounds and sores *IF 231*. Gum is collected from notches in the bark of trees and soaked with honey or mannato make a sweet liquid *IF217*, *CF184*. The bark of most wattles contains tannin *CU51*. Flowers can be fried or mixed into pikelet batter *CF184*.

Acacia decurrens Green Wattle
Leaves can be used to make tea *LT34*. Extract of the bark used to cure diarrhoea *CM53*.

Acacia falcata Sickle Wattle
Bark used as a fish poison *CU91*.

Acacia longifolia Sydney Wattle
Leaves used as a fish poison *CU91*.

Acacia myrtifolia Myrtle Wattle
Leaves used as a hops substitute *CF198*.

Acacia pycnantha Golden Wattle
Tannin content of the bark is high (40%) *CU53*. Extract of the bark used to cure diarrhoea *CM53*.

Acacia sauveolens Scented Wattle
Leaves can be used to make tea *LT34*, *CF200*.

Acianthus caudatus Mayfly Orchid
Edible tubers *CF172*.

Acianthus fornicatus Pixi Cap
Edible tubers *CF172*.

Acmena smithii Lilypilly
Edible fruit *LT62*, *IF217*, *CF10*.

Adiantum aethiopicum Common Maidenhair Fern
Leaves produce an excellent substitute for Chinese tea *LT35*.

Alocasia macrorrhizos Spoon Lily, Cunjevoi
Antedote to sting of giant nettle tree (milky juice rubbed on affected part). Pounded roots used to treat sting of rays, snakes and insect bites. Warmed leaf said to relieve rheumatism, burns, boils and ulcerated sores *IF231*. Fish poison *CU98*.

Alpinia caerulea Local Ginger Plant
Buds stems and root eaten raw, leaves used for flavouring *IF217*. Pulp around seeds can be eaten *CF165*.

Anyema pendulum Drooping Mistletoe
Berries eaten *IF218*, *CF40*.

Angophora costata Rusty Gum
Trunks produce a kino which has been used medicinally as an astringent *CU82*. Roots used as a source of water *CF194*.

Angophora floribunda Rough Bark Apple
Kino was used to tan nets *CU82*.

Apium prostratum Sea Celery
Antiscorbutic *CM89*.

Archontophoenix cunninghamiana Bangalow Palm
Young shoots coming out at the top can be pulled out and eaten raw *LB218*. Sheaths used to make a vessel (scoop-shaped carriers) *CU229*. Used for their cabbage *CF123*.

Arthropodium milleflorum Pale Vanilla Lily
Edible tuberous roots *IF218*, *CF183*.

Asroloma pinifolium Pine Heath
Edible fruit

Astroloma humifusum Cranberry Heath
Fruit make an excellent preserve *LB43*. Edible fruit *IF218*, *CF14*.

Austromyrtus acmenoides Iron Wood
Leaves make a tea substitute *LB34*. Ripe fruit can be eaten *CF201*.

Avicennia marina Grey Mangrove
Large seed pods can be eaten after a lengthy session of pound-

ing, soaking, sifting and baking to remove astringent tannins *LT83, IF218, CF93*. Leaves and twigs used to ease stings from certain sea creatures. Ash from burnt sticks mixed with water and rubbed on the skin for scabies *IF232*. Burnt mangroves were a source of alkaline ash for soap-making *CU236*.

Backhousia myrtifolia Grey Myrtle
Interesting oils can be produced from the leaves *CU17*. Timber can be used to make tool handles, fishing rods and bows *CU112*.
Banksias

Flowers often produce a lot of nectar *LT170, IF218*.
Banksia integrifolia Coast Banksia
Bushmen used to smear the dried cones with fat and burn them as candles *LT170, CU235*.

*Bidens pilosa** Cobblers Pegs
Cooked leaves can be eaten *LT154*. Infusion of the plant, sometimes only the flower heads, used for diarrhoea, dysentery and coughs. Flowers, roots and shoots chewed for toothache. Young shoots chewed for rheumatism *CM127*.

Billardiera scandens Dumplings
Fruits can be eaten, with a taste of stewed Granny Smiths *LT40, IF218, CF70*.

Blechnum indicum Bungwhal Fern
Starchy rhizomes are roasted, then scraped and cut up finely *LT109, CF182*.

Burchardia umbellata Milk Maids
Carrot-like tubers have a pleasant potato taste *LT114, CF167*.
Bursaria spinosa Spiky Bursaria
Nectar is sucked out of flowers *IF219*. Leaves contain aesculin, which absorbs ultra-violet light *CM181*.

Caesia parviflora Pale Lily
Edible tuber *LT116*.

Cakile maritima Sea Rocket
Young shoots are edible. Seeds can be ground as mustard. Roots can be pounded, mixed with flour and eaten *LB147*.

Caladenia carnea Pink Fingers
Edible tubers *LT121, CF172*.

Caladenia catenata
Edible tubers *CF172*

Callicoma serratifolia Black Wattle
Timber used in "wattle and daub" construction *CU113*.
Callistemon species Bottlebrush

Flowers sucked for nectar *IF219*.

Callistemon citrinus Red Bottle Brush
Leaves make a tea *LT36, CF202*.

Canavalia maritima Coastal Pea Flower
Beans soaked in water to remove toxins, then pounded, made into cakes, and roasted *IF219*. An infusion of the roots is drunk for colds, or applied externally for rheumatism, aches and pains, and leprosy *CM23*.

Canthium coprosmoides Canthium
Edible fruit *LT71*.

Capparis arborea Coastal Capparis
Capparis species Forehead cut, then bound with bark or rag soaked in decoction of root bark to relieve headache *IF232*. Pulp around the seeds is edible when the fruit is ripe *CF16*.

*Capsella bursa-pastoris** Shepherds Purse
Leaves and seeds can be eaten *LT146, CF130*. A tea made from dried leaves is drunk for haemorrhages from internal organs, and used externally for nosebleeds and haemorrhoids *CM94*.

Carpobrotus glaucescens Pig Face
Edible fruit and leaves *LT58, CF81*. Juice of the pigface gives relief to sandfly and bluebottle stings (also burns) *CM61*.

Cassytha glabella Slender Laurel
The small fruits are edible but resinous *LT44, CF71*.

Casuarina glauca Swamp Oak
Timber used for axe-handles *CU116*.

Cayratia clematidea Tangle Vine

Root tubers eaten after baking *CF72*.

Centaureum spicatum Centaury
Decoction applied for piles and inflammation of genitals *IF232*.

*Chrysanthemoides moniliferum** Bitou Bush
Edible fruits *LT79*.

Cissus antarctica Hairy Water Vine
A length of vine was made into a loop for climbing trees *CU188*.
Black fruits are edible *CF72*.

Cissus hypoglauca Water Vine
Fruit eaten. Vines found in rainforest, used as a water source *IF220*.

Citriobatus pauciflora Narrow Leaf Orange
Thorn Edible fruit *CF18*.

Clematis glycinoides Forest Clematis
Leaves are crushed in the hands and allowed to warm. The enclosed fumes are inhaled to "cure" headache *CM67*.

Comesperma volubile Twining Comesperma
Root used for diarrhoea *CM89*.

Commelina cyanea Wandering Jew
Young shoots can be eaten cooked *CF132*.

*Conyza canadensis** Canadian Fleabane
Apply the plant externally for skin infections *CM96*.

Correa alba White Correa
A good tea can be made from the leaves *LT33, CF202*.

Crinum pedunculatum Murray Lily
Rub crushed material for Box jellyfish stings *CM68*.

Cryptostylis erectus Spotted Tongue
Orchid Edible tubers *CF172*.

Cryptostylis subulata Long Tongue Orchid
Edible tubers *CF172*.

Cupaniopsis anacardioides Tuckeroo
Flesh around the seeds is edible *CF21*.

Dendrobium teretifolium Pencil Orchid
Bruised leaves applied for acute pains in head or other part *CM159*.

Dendrocnide photinophylla Shiny Leaf Stinging
Tree Inner bark used as a fibre source *CU190*.

Dianella caerulea Flax Lily
Edible fruit *LH8*. Also edible roots *IF220*.

Dichopogon fimbriatus Chocolate Lily
Edible roots *CF186*.

Digitaria sanguinalis Crab Grass
Boiled seeds edible *CF186*.

Dioscorea transversa Yam
Edible tuber *LT16*. Dug from end of March to end of August *IF220*. Decoction used for skin cancer *CM27*.

Dipodium punctatum Hyacinth Orchid
Edible tubers (better cooked) *LT122, CF172*.

Diuris aurea Golden Diuris
Edible tuber *LT122, CF172*.

Diuris brevissima Small Figner Orchid
Edible tuber *LT122, CF172*.

Diuris punctata Purple Diuris
Edible tuber *LT122, CF172*.

Diuris sulphurea Tiger Orchid
Edible tuber *LT122, CF172*.

Doryanthes excelsa Giant Lily
Leaves contain a strong fibre *CU191*. Young flowering stems when 0.5m high are roasted and eaten. Roots are roasted and eaten *CF134*.

Drosera peltata Pale Sundew
Beneath the thin black skin of the tuber (8cm below the surface) is a small amount of yellow-brown colouring matter, used as a dye *CU66*. Leaves are mashed, with or without salt, and applied to the skin to raise a blister as a counter-irritant. Juice used to remove warts and corns *CM137*.

Duboisia myoporoides Small Corkwood

Alkaloid-rich sap drunk to produce stupor; also used as a fish poison *IF235*.
*Eleusine indica** Cross Foot Grass
 Seeds can be ground for bread *LT88*, *CF117*. Juice of leaves given to women after childbirth. Roots used to produce sweat for liver complaints and fevers *CM159*.
Enchylaena tomentosa Ruby Salt Bush
 Edible fruit and leaves *LT54*, *CF27*.
Erechtites valerianifolia Brazilian fireweed
 Leaves can be cooked and eaten *CF136*.
Eucalyptus species Gum tree
 Gum mixed with water and taken internally for diarrhoea. Dental cavities filled with gum to relieve pain *IF235*. Smooth-skinned bumps provided bowls. *CU230*. Leaves were smoked as an alternative to tobacco *CU168*.
Eucalyptus agglomerata Blue Leaf Stringy Bark
 Bark used as a touch for spear-fishing at night *CU192*.
Eucalyptus botryoides Bangalay
 Timber suitable for making tobacco pipes *CU244*.
Eucalyptus globoidea Round Fruit Stringybark
 Inner bark has strong fibres *CU193*.
Eucalyptus gummifera Bloodwood
 Exudation or gum taken internally or dusted on locally in powder form for venereal sores. Also used with leaves and mud on wounds to stop bleeding *IF235*, *CU31*. Fishing lines were soaked in the sap to prevent them from fraying *CU85*. Kino was a cure for ringworms *CU31*.
Eucalyptus paniculata Grey Ironbark
 Water tree whose roots are sometimes tapped for water *IF223*.
Eucalyptus pilularis Blackbutt
 A blue-grey dye can be had from the wood chips *CU67*.
Eucalyptus piperita Sydney Peppermint
 A peppermint oil can be extracted from the leaves *CU16*.
Eucalyptus punctata Grey Gum
 Manna found on the trunk can be eaten *CF220*.
Eucalyptus robusta Swamp Mahogany
 Timber suitable for making tobacco pipes *CU244*.
Eucalyptus signata Large Scribble Gum
 Kino used for diarrhoea *CU75*.
Eucalyptus tereticornis Forest Red Gum
 Lerps which form on the leaves can be eaten *CF220*.
Euphorbia drummondii Flat Spurge
 Whole plant boiled and liquid applied for scabies or rubbed vigorously for pains in the chest *IF236*. Milky juice used to cure warts *CF266*.
Eustrephus latifolius Wombat Berry
 Small sugary tubers are edible *LT16*, *CF160*. Flesh around seeds is edible *CF160*.
Exocarpos cupressiformis Cherry Ballart
 Edible fruit *LT48*. Fruit eaten in Winter when deep red *IF223*.
 Twigs recommended as a bitter tonic and astringent *CU89*.
Exocarpos stricta Sour Cherry
 Edible fruit *LT48*.
Ficus coronata Sand Paper Fig
 Edible fruit, Leaves used as sandpaper *LT64*, *CU249*, *CF30*.
Fimbristylis dichotoma Common Fringe-Rush
 A source of fibre and cane *CU212*.
*Foeniculum vulgare** Fennell
 Seeds and leaves edible *LT180*, *CF112*. Fruit used with purgatives to prevent griping; ingredient of gripe water *CU117*.
Gahnia aspera Saw Grass
 Seeds pounded to produce flour *CF114*.
*Galium aparine** Bed Straw
 Edible leaves. Seeds, roasted, can be made into coffee *LT30*, *CF137*. A tea made from the leaves was taken for a tonic and as a remedy for insomnia, and as a cold cure *CU100*.
Gastrodia sesamoides Potato Orchid

Edible tuber *LT122*. Tubers roasted *IF224*.
Geitonoplesium cymosum Scrambling Lily
 Vines used as rope *CU195*. Boiled young shoots can be eaten *CF125*.
Glossodia major Large Wax Lip Orchid
 Edible tuber *LT120*, *CF172*.
Glossodia minor Small Wax Lip Orchid
 Edible tubers *CF172*.
Glycine tabacina Large Leaf Glycine
 Infusion taken for dysentery *CU160*.
Goodenia ovata Large Leaf Goodenia
 An infusion of the green parts is claimed to be useful against diabetes *CU36*.
Gymnostachys anceps Settlers Flax
 Fibres in the leaves used as string *CU195*.
Hardenbergia violacea False Sarsparilla
 Flowers area source of dye *CU68*. Tea can be made from the leaves *CF206*.
Helichrysum apiculatum Common Everlasting
 Reputed to be a help against intestinal worms *CM89*.
*Heterotkeca grandiflora** Camphor Daisy
Hovea lanceolata Lance Leaf Hovea
 Young pods eaten *IF224*.
Hovea linearis Erect Hovea
 Young pods eaten *IF224*.
Hypoxis hygrometrica Golden Weather Grass
 Small fleshy tubers eaten *IF224*, *CF170*.
Imperata cylindrica Blady Grass
 Sharp unfolded grass leaves used to tickle the nose to cause sneezing *IF237*. Stem fibres used to make rope. Soaked dried leaves are split and woven into baskets. Leaves used as a thatch. Silky plumes used to stuff pillows *CU197*. Edible underground shoots *CF180*.
Indigofera australis Indigo
 Roots hammered and placed in fresh or salt water as a fish poison *IF237*, *CU98*.
Ipomoea brasiliensis Morning Glory
 Leaves made into an infusion for treating both marine stings and for relieving the itch of scabies. Whole plant boiled and decoction drunk to cure venereal disease. Leaves heated and applied to blind boils to make them discharge *IF237*.
Kennedia prostrata Running Postman
 Nectar. Leaves can be made into a tea *LT34*, *CF207*. Stems used as a twine *CU198*.
Lambertia formosa Mountain Devil
 Nectar *LT171*, *IF225*.
*Lantana camara** Lantana
 Edible (though not tasty) fruit *LT78*, *CF33*. Oil distilled from leaves with odour similar to sage *CU47*. Leaves used as fine sandpaper *CU249*. Pounded leaves used externally for cuts, ulcers and swellings *CM142*.
Lepironia articulata
 A source of fibre and cane *CU212*. Edible underground stems *CF180*.
Leptocarpus tenax Slender Wire Grass
Leptomeria acida Sour Currant Bush
 Edible fruit *LT44*, *CF34*. (In Spring) *IF225*.
Leptospermum species
 Leaves and young shoots of all species reputed useful for urinary complaints *CM89*.
Leptospermum laevigatum Coast Teatree
 Tea can be made from the leaves *LT32*.
Leptospermum liversidgei Citron Teatree
 Leaves are a source of lemon-scented oil *CU30*. Leaves make a tea *CF204*.
Leucopogon lanceolatus Lance Beard-Heath
 Edible fruit *CF35*.

<i>Leucopogon parviflorus</i>	Coast Beard-Heath
Edible fruit <i>LT54, CF35</i> .	
<i>Livistona australis</i>	Cabbage Tree Palm
Edible inner shoots <i>LT22, CU199, CF122</i> . Young shoots and leaves eaten raw <i>IF225</i> . Leaves used for making bags, baskets, fishing line and nets (outer layer of young unopened leaves). Leaves used for thatching. The unexpanded fronds, prepared by immersion in boiling water and dried, are used in the manufacture of durable hats <i>CU199</i> .	
<i>Lomandra longifolia</i>	Spiked Mat-Rush
Leaves can be used for basket making. Flowers and leaf base edible <i>LT131, CF187</i> . Seeds eaten <i>IF225</i> .	
<i>Lomatia silaifolia</i>	Crinkle Bush
Bunches of flowers left in a room will kill flies and mosquitoes <i>CM77, CF215</i> .	
<i>Macrozamia communis</i>	Burrawang
Seeds are extremely poisonous but can be made edible by roasting, pounding, and washing in running water for a week <i>LT84</i> . Soft brown hairs used for stuffing <i>CU201</i> . Trunk and tubers are rich in laundry starch. Starch also used as an adhesive. Seeds are also a source of starch <i>CU242</i> .	
<i>Melaleuca species</i>	Paperbark
Bark used as bandages <i>IF237</i> . Nectar <i>CF216</i> .	
<i>Melaleuca linariifolia</i>	Snow in Summer
Oil from leaves has the scent of nutmeg <i>CU37</i> .	
<i>Melaleuca quinquenervia</i>	Broad Leaf Paper Bark
Bark is useful for roofing, containers and making rafts. Nectar. Tea can be made from the leaves <i>LB32, CF205</i> . Oil extracted is called niaouli <i>CU32</i> . New leaves chewed for head colds <i>CM38</i> .	
<i>Melaleuca thymifolia</i>	Feathered Honey-Myrtle
A eucalyptus oil can be distilled from the leaves <i>CU32</i> .	
<i>Melichrus urceolatus</i>	Urn Heath
Nectar <i>CF216</i> .	
<i>Microtis oblonga</i>	Sweet Onion Orchid
Edible tubers <i>CF172</i> .	
<i>Myoporum insulare</i>	Boobialla
Edible fruit <i>CF42</i> .	
<i>Nymphaea capensis</i> *	Cape Water Lily
Edible pods, seeds, stalks and tubers <i>LT110, IF226</i> .	
<i>Omolanthus populifolius</i>	Bleeding Heart
Broken tissues exude a yellowish latex used to treat warts. Crushed leaves useful for stopping small haemorrhages <i>CM80</i> .	
<i>Opuntia stricta</i> *	Prickly Pear
Juice used as a cough syrup <i>CM80</i> . Fruit but not seeds are eaten <i>CF44</i> .	
<i>Panicum effusum</i>	Hairy Panic
Seed ground and baked <i>IF226</i> .	
<i>Persoonia levis</i>	Broad Leaf Geebung
Leaves contain an antibacterial principle <i>CM195</i> .	
<i>Phragmites australis</i>	Common Reed
Stems used for making bags and baskets. Thatching. Robust stems used for arrows. Pens made from the stem. Suitable for making paper <i>CU204</i> . Underground stem, growing under mud, is taken internally for arthritis, jaundice and food poisoning <i>CM148</i> . Rhizome can be eaten after boiling or roasting. Young shoots can be eaten <i>CF141</i> .	
<i>Phytolacca octandra</i> *	Parramatta Bush
Juice from the fruit can be used as ink <i>CU222</i> .	
<i>Pimelea linifolia</i>	Slender Rice Flower
Strong fibrous bark <i>CU204</i> .	
<i>Pittosporum revolutum</i>	Yellow Pittosporum
Leaves can be used as soap <i>CU240</i> .	
<i>Planchonella australis</i>	Black Apple
Edible fruit <i>LB61, CF49</i> .	
<i>Podocarpus pinulosus</i>	Small Plumb Pine
Edible fruit <i>LT22</i> . The fruit is a fleshy stalk, discard the centre <i>CF51</i> .	
<i>Portulaca oleracea</i> *	Pigweed
Seeds are ground and made into bread <i>LT14, CF142</i> . Leaves eaten raw, roots cooked <i>IF228, CF142</i> . High vitamin C content <i>CM108</i> .	
<i>Pteridium esculentum</i>	Bracken Fern
Rhizomes are roasted and chewed to remove the starch (flavour with crushed ants) <i>LT107 IF228</i> . The underground stem is used to treat diarrhoea and intestinal inflammation. Roots used in an ointment for wounds. Ashes of burnt fronds applied as a remedy for severe burns. Young stems rubbed on insect bites <i>CM109</i> .	
<i>Ricinus communis</i> *	Caster Oil Bush
Medicinal and useful oil from the seed <i>CU45</i> .	
<i>Romulea rosea</i>	Pink Star
Seeds can be eaten <i>LT88</i> .	
<i>Rubus species</i>	Native raspberry
Decoction of young leaves drunk for 'bad belly' <i>IF238</i> . Edible fruit <i>CF53</i> .	
<i>Rubus moorei</i>	Bush Lawer Vine
Edible fruit <i>CF54</i> .	
<i>Rubus rosifolius</i>	Forest Bramble
Taken as a tea for menstrual pains, morning sickness and labour pains <i>CM84</i> . Edible fruit <i>CF55</i> .	
<i>Sarcocornia quinqueflora</i>	Glasswort
Used as a pickle <i>LT20</i> .	
<i>Scaevola calendulacea</i>	Blue Berry Scaevola
Edible fruit <i>LT52, CF58</i> .	
<i>Senecio vulgaris</i> *	Fireweed
An infusion or decoction taken as an emetic and purgative. Infusion used as a soothing application for chapped hands, gout, haemorrhoids, and mastitis <i>CM112</i> .	
<i>Setaria glauca</i> *	Pale Pidgeon Grass
<i>Sida rhombifolia</i>	Paddys Lucern
Bark fibres used in rope <i>CU208</i> . Young tips are chewed for diarrhoea. Extracts of roots or leaves are used for fever. Pulped leaves or roots are used as a poultice for ulcers and sores <i>CM86</i> .	
<i>Sigesbeckia orientalis</i>	Indian Weed
Fresh juice when applied to the skin, dries to leave a clear varnish-like layer, for wounds, ulcers, ring worm, leprosy and syphilitic sores <i>CM152</i> .	
<i>Smilax australis</i>	Austral Smilax
Tea is made from the leaves <i>CM86</i> . Edible peppery fruit <i>CF80</i> .	
<i>Smilax glycyphylla</i>	Sarsaparilla
Leaves make a tea <i>LT22, CM86, CF207</i> . Decoction of leaves drunk for coughs and chest troubles (reputation as a tonic and general remedy) <i>IF239</i> .	
<i>Solanum aviculare</i>	Kangaroo Apple
Edible fruit <i>LT64</i> . The plant contains steroids <i>CM197</i> .	
<i>Solanum laciniatum</i>	Large Kangaroo Apple
Fruit eaten raw or roasted <i>IF228, CF60</i> . The plant contains steroids <i>CM197</i> .	
<i>Solanum mauritanum</i> *	Tree Tobacco
Edible fruit <i>LT79</i> .	
<i>Sonchus oleraceus</i> *	Common Thistle
Edible leaves <i>LT151, CF146</i> . Eaten raw to ease pain and induce sleep <i>IF239</i> . Latex used for warts and ulcers. Crushed leaves used as a poultice for dressing wounds. Contains vitamin C <i>CM113</i> .	
<i>Spartothamnella juncea</i>	Red Bead Bush
Lung complaints and cough treated with decoction. Also drunk for post-partum fever <i>IF239, CM51</i> .	
<i>Spinifex hirsutus</i>	Hairy Spinifex
Stems used for making bags <i>CU208</i> .	
<i>Stephania japonica</i>	Southern Japonica
Lengths of stem 60cm were pounded and thrown into a waterhole to poison fish <i>CU97</i> . Tubers and roots used for treating diarrhoea, stomach ache and fevers <i>CM199</i> .	
<i>Syzygium coolminianum</i>	Brush Cherry
Edible fruit <i>CF65</i> .	

*Tagetes minuta** Stinking Roger
Aromatic oil is distilled from the leaves *CU34*. Plant has insect-repelling properties *CM154*.

*Taraxacum officinale** Dandelion
Coffee is made from the roots *LT28*. A decoction made by boiling the sliced root in water for 20 min. then sweetening the liquid with honey is used as a mild laxative, as a tonic for biliousness, eczema and scurvy *CM115*.

Tasmannia insipida Pepper Bush
Edible fruit *CF66*.

Tetragonia tetragonioides New Zealand Spinach
Leaves used as a spinach *LT20*, *CF149*. Used for stomach cancer *CM162*.

Thelymitra ixioides Sun Orchid
Edible tubers *CF172*.

Themeda australis Kangaroo Grass
Seeds ground and baked (Dec. to Mar.) *IF229*.

Thysanotus tuberosus Fringe Lily
Edible tuber *LT113*, *CF175*. Edible root is in hard shell, which splits open when the tuber is cooked in hot ashes *IT229*.

Trachymene incisa Parsnip
Edible roots *CF175*.

Trifolium repens White Clover
A tea is made from the flower heads *LT174*. Edible flowers *CF189*.

Triglochin procera Water Ribbons
Edible tuber *LT109*, *IF229*. Baked *CF176*. Edible fruits *CF176*.

*Tropaeolum majus** Nasturtium
Edible leaves (cooked). Young seeds can be pickled like capers *LT148*.

Typha orientalis Bull-Rush
Edible rhizomes *LT109*. Spring and Summer *IF229*. Leaves used for thatching, mats and rope. Fluff used for stuffing pillows and mattresses *CU210*. Edible pollen Baked. Young flowering spikes edible after cooking *CF190*.

Urtica incisa Nettle Bush
Leaves can be eaten after boiling or baking *LT150*, *CF151*. For rheumatism, affected parts beaten with a bunch of leaves to cause a nettle rash. For sprains, infusion used to bathe the affected part. Boiled leaves used as a poultice *IF240*. *CM49*.

Wahlenbergia communis Clustered Blue Bell
Edible flowers *CF190*.

Wahlenbergia gracilis Blue Bell
Edible flowers *CF190*.

Wahlenbergia stricta Small Blue Bell
Edible flowers *CF190*.

*Wedelia biflora** Wedelia
Root decoction or leaf infusion drunk for fevers, leaves used for poultices *CM163*.

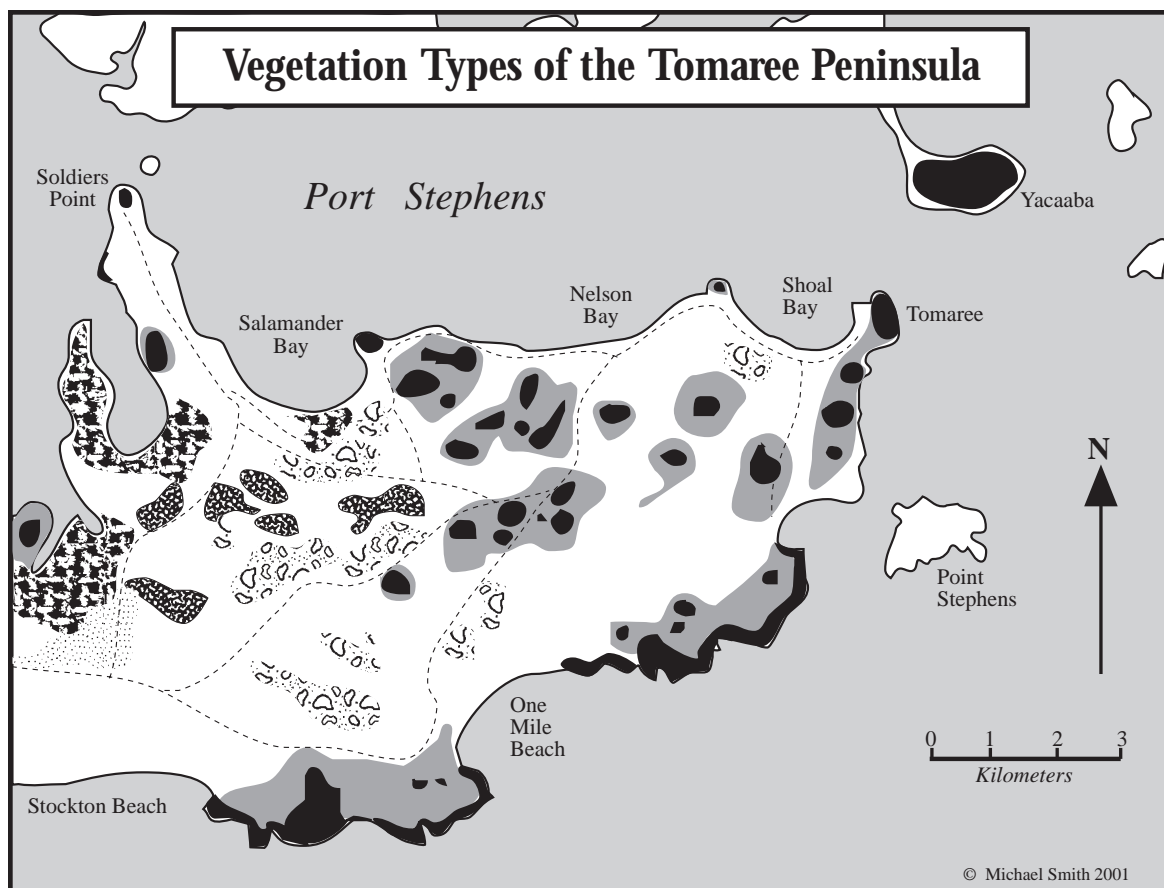
Wikstroemia indica Wikstroemia
Fish poison *CU98*.

Xanthorrhoea australis Austral Grass Tree
Useful gum (for cementing). Starchy inner shoots are edible. Nectar *LT130*, Edible flowers *CF1217*. Flowering spikes are soaked in water to collect sweet nectar *IF229*, *CU164*. Flowering spikes used to make fire by friction, and as a fishing spear *CU232*.

Xanthorrhoea resinosa Spear Grass Tree
Gum of value in chest complaints *IF240*.



Vegetation Types of the Tomaree Peninsula



© Michael Smith 2001

TERRESTRIAL DUNES. Low sand ridges varying in height from 3 to 30 metres above sea level. Well drained, acidic, low fertility Quarternary sand. Forested cover consists of smooth-barked apple, blackbutt, bloodwood, saw-toothed banksia and forest oak. The understory consists of various wattles, broad-leaved geebung, paper-bark tea tree and gymea lily. Much of this land was mined for heavy minerals in the early seventies.

VOLCANIC HILLS. Steep conical hills varying in height from 30 to 170 metres above sea level. Dolerite dykes can be found among the Phylolite, Toscanite and Andesite lava flows. The soils consist of gritty clays that are poorly drained and acidic. Trees consist of scribbly gum and bastard mahogany, with an understory of mountain devils, gymea lily and christmas bells. These forested volcanic hills are the most distinctive landscape features on the Tomaree Peninsula.

VOLCANIC HILLS WITH A MANTLE OF SAND. The sandy soils over a gritty clay substrate nurture vegetation similar to that of "Terrestrial Dunes" above. This sloping ground (10-30% gradient) provides a transition from the volcanic peaks to the surrounding lowlands.

MANGROVES AND SALT MARSH. These lowland areas, being less than 2 metres above sea level consist of saline mud and sand. They support a low forest of grey mangrove, swamp oak and tuckeroo. The associated herbfield consists largely of salt couch and saltwort. These areas are vital to the fishing industry both professional and amateur.

GAHNIA SWAMP. Lowland areas no more than 2 metres above sea level providing a transition between saline wetlands and terrestrial dunes. The acidic bog soil is water logged and rich in peat. The forested areas contain swamp mahogany, broad-leaved paperbark and prickly-leaved paperbark. The shrubs include red bottle-brush, swamp may and slender wattle. The following herbs are also present, swordgrass, restio, christmas bells, milk maids and vanilla plant. Generally, the Gahnia Swamp is characterised by open expanses of water surrounded by herbfields and paperbark forests.

MELALEUCA SWAMP. These are areas of land no higher than 3 metres above sea level. The bog soil is water logged and acidic. The dominant trees are broad-leaved paperbark, swamp mahogany and a number of other paper barks and tea trees. The herbs present include swamp fern, restio, coral fern and sphagnum moss.

CASUARINA FOREST AND SEDGE SWAMP. A flat area no more than 2 metres above sea level. The soil is acidic, poorly drained and rich in peat. Characteristic trees are cabbage tree palm, swamp oak and prickly-leaved paperbark. On the ground grows swamp fern and cutty grass. Much of this land has been cleared and drained for agriculture.

GEOLOGY

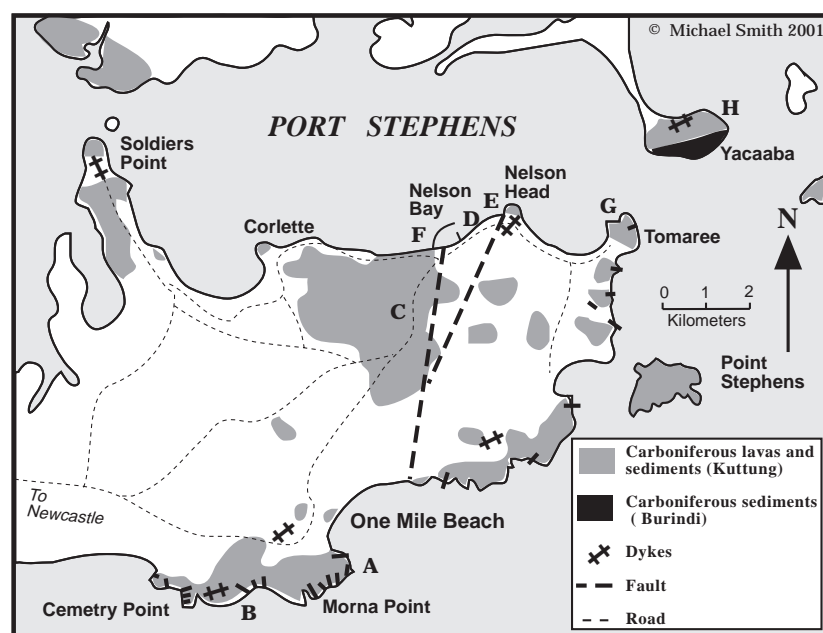
A. At Morna Point on the southern headland of One Mile Beach there is a 100m thick flow of rhyolite (phenocrysts of quartz, orthoclase and plagioclase). Erosion along joint planes has led to the formation of small stacks (pillars). Here the rhyolite has been intruded along the joint planes by fine grained dolerite dykes of Tertiary age (40 million years ago). These dykes vary from a few centimetres to 5 metres in width. In some places the dykes have been weathered away to form a chasm (deep ditch).

B. Between Morna and Cemetery Points there are 40 or 50 dykes. This is called a dyke swarm. Some dykes run in a North-South direction and others East-West. A few of them have "jumped" from one joint plane to another.

C. At Gan Gan there is an outcrop of toscanite, some of which has weathered to clay.

D. Between Halifax Park and Nelson Head is another toscanite flow about 30 metres thick. Within this toscanite is a glassy phase 3-4 metres thick. Here some of the black glass is devitrifying into a stony type of toscanite. Also caught up in the flow are pebbles and xenoliths (broken fragments of the earlier cooled crust) as well as haematite staining. At Nelson Bay dolerite dykes also occur in the toscanite.

E. At Halifax Park, along the foreshore is a raised pebbly beach indicating an emergence of the land of about 4 metres.



F. Near the Fishermans Co-Op at Nelson Bay are two flows of hornblende-pyroxene andesite separated by coarse conglomerates. There are other similar flows between here and Corlette Point. The flow is 30 metres thick at sea level. The conglomerate is 10 metres thick. Boulders range up to one metre in diameter, and consist of granite, quartz porphyry and feldspar porphyry in a tuffaceous matrix.

G. Tomaree consists of an outcrop of andesite at sea level overlain by toscanite.

H. Similarly Yacaaba consists of andesite at sea level on the northern side, overlain by toscanite. These lavas are separated by a sedimentary fault of the Burindi Series, outcropping on the south. Burindi sediments consist of a bed of conglomerates over the top of a thin bed of tuffaceous limestones.

Rhyolite is formed when molten material called magma cools relatively slowly to form a hard-wearing rock of minerals and crystals. Rhyolite has the same mineral composition as granite but cools too quickly to form large crystals and ends up fine grained. Quartz, alkali feldspar and plagioclase feldspar are the three main minerals present.

Dolerite has the same chemistry as gabbro and basalt. It is medium-grained plagioclase and pyroxene, 10% quartz, olivine and magnetite. It cools more slowly than basalt.

Andesite. Fine grained, with 60% silica content. It is composed mostly of plagioclase feldspar along with pyroxene and biotite mica.

Port Stephens Geologic History.

In past times this area was a plain which was uplifted 300 metres at the end of the Tertiary period, 10 million years ago. The resulting plateau has been eroded down to its present level, with the exception of the many hills such as Gan Gan, Glovers Hill etc. remaining at the original level.

Port Stephens became an estuary during the Late Pleistocene (70,000 years ago) when the sea level rose about 60 metres. The higher points remained as islands.

Since then an emergence of 5 metres has taken place raising some land above the current sea level, about 6000 years ago.

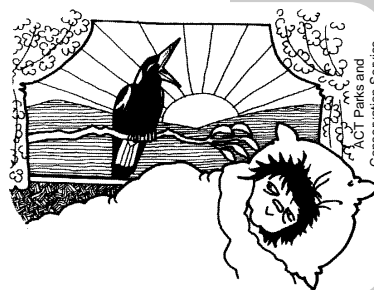
Port Stephens is a drowned valley. Before submergence a ridge at Soldiers Point to Middle Island and beyond divided the watershed of the Karuah and Myall Rivers. Before submergence the Karuah River flowed south to join up with the Hunter River system. At that time the Myall River alone flowed into what we now call Port Stephens.

Rocks in the Port Stephens area belong to the Carboniferous Kuttung Series. This comprises lava flows composed of andesite and rhyolite, separated by eroded weaker sedimentary strata.

Obsidian. Silica-rich volcanic rock. It has glass as its main component which breaks with a very sharp conchoidal fracture. Formed by the very rapid cooling of viscous acid lava.

Characteristic weather patterns of Port Stephens

- * From October to March the main wind is an onshore nor-easter. It generally blows from late morning until midnight.
- * April to September the predominant wind is from the west. These winter westerlies are occasionally as strong as 50 knots. Late May to early June is the most common time for this wind to occur. If the westerly wind has not dropped after 3 days then it will most likely blow and rain for a further one or two weeks. After any such strong blow the view of the night sky, and the view from the hill tops is particularly clear.
- * During winter, north and north-east winds are usually light and accompanied by rain.
- * A strong wind known as the "southerly buster" occurs mostly during the warmer months and is advertised by heavy clouds building up in the south, and is sometimes associated with thunder and lightning. During such an occurrence the thermometer has been known to drop from 40°C to 18°C in less than half an hour.
- * In July and August the barometer usually averages 1020 mb, whilst December and January averages 1012mb.
- * "Black north-easters" occur when a steady gale blows for 3 or 4 days. Along with the wind is heavy rain and gloomy dense cloud. Visibility in the squalls can be less than 500 metres.
- * The "tail end" of cyclonic gales from the north-east can sometimes be felt between December and April.
- * A heavy dew at night is an indication of north-east winds on the following day.
- * A steady falling barometer with southerly wind is a sure indication of boisterous conditions from a cyclonic disturbance from the east or north-east.
- * A gradually rising barometer with northerly winds is the forerunner of northerly gales.



ACT Parks and
Conservation Service

WEATHER

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Maximum C°	27	27	26	24	20	18	18	19	20	23	25	26
Minimum C°	19	19	17	15	12	10	8	9	10	14	15	17
Rainfall mm	102	106	119	119	147	155	143	106	92	78	69	96
Humidity %	70	70	67	61	64	63	51	53	62	59	64	66
Rain Days	12	11	12	12	13	13	12	11	11	11	10	11
Wind speed knots 9am	7	6	5	6	7	8	8	7	7	7	8	7
Wind speed knots 3pm	10	11	9	8	9	8	8	8	9	10	10	11
Wind direction 9am	NE			W			W			W/NE		
Wind direction 3pm	NE			NE			W			NE		
Sunshine hours	7+			7+			6+			7+		
Water Temp C°	25	25	24	21	16	13	13	14	17	20	22	24

FEEDING BIRDS

Artificial feeding of birds alters their natural behaviour and can have a damaging effect on their health. Their natural food has the right balance and is better for them. Artificial feeding can cause birds and animals problems such as obesity, nutritional deficiency, reduced breeding success and infections. They do however appreciate a drink of fresh clean water. Bird baths should be a least 1 metre off the ground and in an area safe from cats. To keep cats out of trees, nail a sheet of tin 750 mm wide completely around the trunk about 1 1/2 metres above the ground. A simple birdbath can be made from an upturned metal garbage can lid, centred over a length of clay drainage pipe. A brick weight attached to the lid handle and hanging down the centre of the pipe will keep it stable.

You can also consider putting a pond in your garden, either a fancy fibreglass job from the shop or a piece of black garden plastic over a shallow hole. Tap water is chlorinated and will fight with any living organisms. Rain water is better, and best of all is a little 'natural' pond water to introduce a ready-made community of organisms. After that you can indulge in frogs, fish and aquatic plants. Just make sure that you are not responsible for the next generation of mosquitos.

Many birds and animals have adapted to suburban gardens and urban living surprisingly well. The food source is there, albeit with the extra dangers of dogs and cats. The most pressing problem is nesting hollows and safe refuges. Artificial nest boxes are an answer and can greatly help in reestablishing a species to an area. Nest boxes should be placed in cat-proofed trees and may eventually be used by possums, gliders, parrots, rosellas and galahs.



ACT Parks and Conservation Service

Rockeries and dense areas of low bushes and ferns will attract lizards and ground-dwelling mammals and birds. Good shelter is provided by hollow logs, broken clay pipes or a clay tile kept just off the ground by 4 stones.

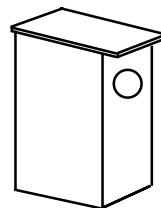
A nest box should be 3-4 metres above the ground, with the opening away from the prevailing wind (N.E. in the summer and westerly in the winter).

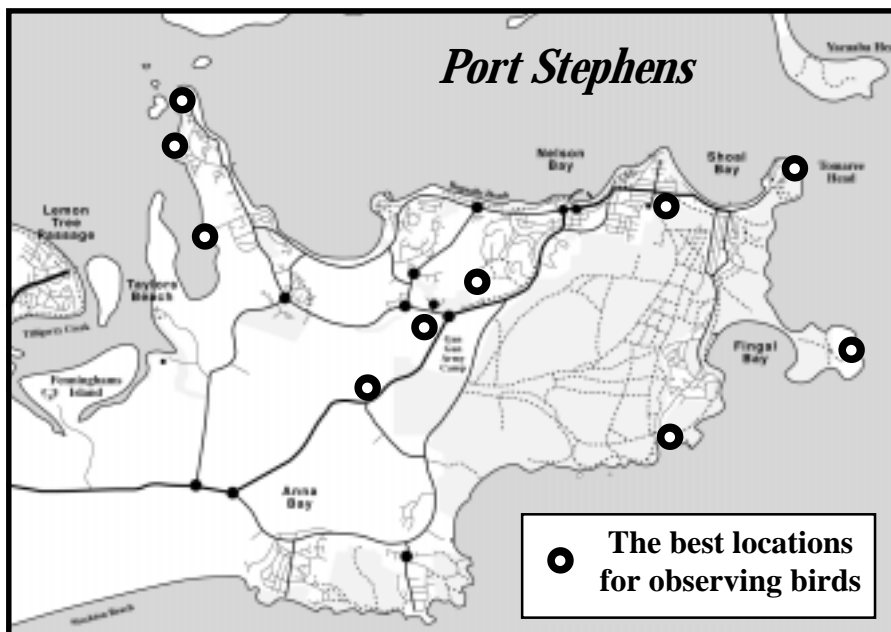
Nest boxes can be attached to the trunk with strips of plastic, metal or leather nailed on with galvanised nails. Roosts for insectivorous bats can be placed under the eaves of a house or shed. Parrots and kookaburras prefer their nests 5 to 6m above the ground.

Domestic pets should never be abandoned in the bush. Cats and dogs should be desexed and kept within the owners yard, especially at night. A reflective collar and a few bells on a cat will help alert the wildlife of its presence.

Chemicals. It is better to encourage blue tongue lizards into your garden than to use snail baits. Consider the effects on your health and the environment of regular outside spraying of insecticides to get rid of a few spiders and insects. Insect-eating birds can be killed by eating poisoned insects. Insects are part of the food chain and any reduction in their numbers will be felt in the native population.

Species	Floor dimensions, mm	Depth of cavity, mm	Entrance height, mm	Entrance diameter, mm
Fairy martin	100x100	250	200	38
Spotted pardalote	100x100	250	215	40
Dusky woodswallow	150x150	250	215	50
Eastern rosella	180x180	270	220	60
Rainbow lorikeet	200x200	270	220	60
Boobook owl	215x215	460	360	100
Galah	250x250	610	510	100
Kookaburra	280x280	610	510	100





OBSERVING BIRDS

There are a few items of equipment that will help you identify your local birds. You will need a pair of binoculars. Nothing bigger than 7 x 50 is necessary, 8 x 40 or 6 x 30 are good enough. A heavy pair will become a burden, and you will eventually tire of carrying them and leave them at home. If you can possibly afford it, expensive binoculars are definitely worth the money. Leave the case at home, hang them around your neck. The more compact and quick-focusing the better. Carry a field guide for identification. Alternatively, in a small note pad quickly sketch the bird's general shape, head and beak shape and any distinctive markings. Later at home you can pour over your books and positively identify it. For this there is no better book than "Readers Digest Complete Book of Australian Birds".

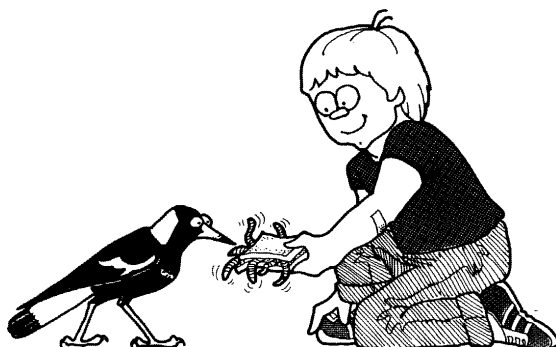


Disabled people or those who have trouble moving around in the bush can still enjoy the birds. Sitting quietly in a chair, the birds will come to you. A few sounds will encourage them. Make a hissing noise between two fingers, or the sound "tch". The "Audubon bird call" is

available from the Wilderness Society and makes a range of twittering

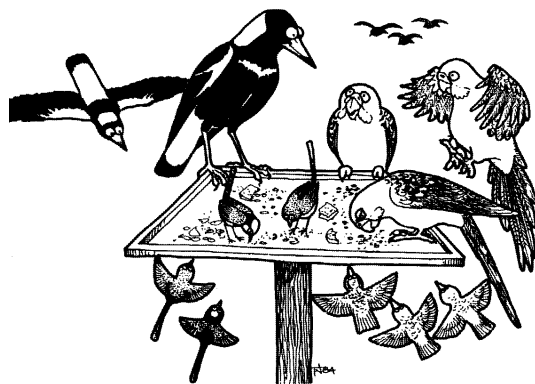


sounds. Duck hunters also have a range of callers. It is possible to play tapes of birdcalls. The males especially will be interested in who is trespassing on their patch. It also puts them under stress so don't overdo it. The best place to wait for birds is at their food source, flowers heavy with nectar, berry-bearing plants and near fresh water. Wading birds will pick the sandflats and mudflats at low tide and can be observed from a car or boat. Owls watch over clearings in the bush at night. Most birds are active just after first light.



ACT Parks and Conservation Service

BIRDS of the Tomaree Peninsula



ACT Parks and Conservation Service

Australasian Grebe
Little Penguin
Wandering Albatross
Gould's Petrel
Wedge-tailed Shearwater
Sooty Shearwater
Short-tailed Shearwater
Australian Pelican
Australasian Gannet
Darter
Great Cormorant
Pied Cormorant
Little Black Cormorant
Little Pied Cormorant
Pacific Heron
Great Egret
Intermediate Egret
Little Egret
White-faced Heron
Eastern Reef-Egret
Striated Heron
Cattle Egret
Rufous Night-Heron
Australasian Bittern
Black-necked Stork
Glossy Ibis
Australian White Ibis
Straw-necked Ibis
Royal Spoonbill
Yellow-billed Spoonbill
Musk Duck
Black Swan
Maned Duck
Grey Teal
Chestnut Teal
Mallard
Pacific Black Duck
Australian Brush-Turkey
Osprey
Pacific Baza

Black-shouldered Kite
Black Kite
Whistling Kite
Brown Goshawk
Collared Sparrowhawk
Grey Goshawk
Little Eagle
White-bellied Sea-Eagle
Wedge-tailed Eagle
Swamp Harrier
Brown Falcon
Australian Kestrel
Australian Hobby
Peregrine Falcon
Stubble Quail
Brown Quail
Lewin's Rail
Buff-banded Rail
Dusky Moorhen
Purple Swampphen
Eurasian Coot
Pied Oystercatcher
Sooty Oystercatcher
Black-winged Stilt
Red-necked Avocet
Bush Thick-knee
Masked Lapwing
Lesser Golden Plover
Grey Plover
Black-fronted Dotterel
Double-banded Dotterel
Red-capped Plover
Mongolian Plover
Ruddy Turnstone
Bar-tailed Godwit
Black-tailed Godwit

Whimbrel
Eastern Curlew
Greenshank
Grey-tailed Tattler
Terek Sandpiper
Sharp-tailed Sandpiper
Red-necked Stint
Curlew Sandpiper
Latham's Snipe
Pomarine Jaeger
Arctic Jaeger
Silver Gull
Caspian Tern
Common Tern
Crested Tern
White-headed Pigeon
Feral Pigeon
Spotted Turtle-Dove
Brown Cuckoo-Dove
Emerald Ground-Dove
Common Bronzewing
Brush Bronzewing
Crested Pigeon
Bar-shouldered Dove
Peaceful Dove
Topknot Pigeon
Wompoo Fruit-Dove
Red-tailed Black-Cockatoo
Glossy Black-Cockatoo
Yellow-tailed Black-Cockatoo
Pink Cockatoo
Sulphur-crested Cockatoo
Little Corella



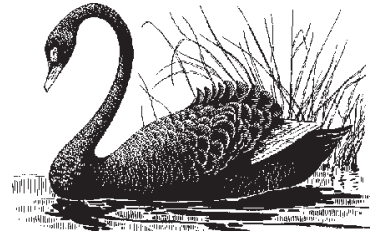
Galah

Rainbow Lorikeet
 Scaly-breasted Lorikeet
 Little Lorikeet
 Australian King-parrot
 Crimson Rosella
 White-cheeked Rosella
 Red-rumped Parrot
 Pallid Cuckoo
 Brush Cuckoo
 Fan-tailed Cuckoo
 Horsfield's Bronze-Cuckoo
 Shining Bronze-Cuckoo
 Common Koel
 Channel-billed Cuckoo
 Pheasant Coucal
 Southern Boobook
 Barking Owl
 Barn Owl
 Masked Owl
 Tawny Frogmouth
 White-throated Nightjar
 White-throated Needle-tail
 Fork-tailed Swift
 Laughing Kookaburra
 Sacred Kingfisher
 Azure Kingfisher
 Rainbow Bee-eater
 Dollarbird
 Welcome Swallow
 Tree Martin
 Fairy Martin
 Richards Pipit
 Black-faced Cuckoo-shrike
 White-bellied Cuckoo-shrike
 Cicadabird
 White-winged Triller
 White's Thrush



Rose Robin

Eastern Yellow Robin
 Jacky Winter
 Crested Shrike-tit
 Rufous Whistler
 Golden Whistler
 Grey Shrike-thrush
 Black-faced Monarch
 Spectacled Monarch
 Restless Flycatcher
 Leaden Flycatcher
 Satin Flycatcher
 Rufous Fantail
 Grey Fantail
 Willie Wagtail
 Eastern Whipbird
 Grey-crowned Babbler
 Clamorous Reed-Warbler
 Little Grassbird
 Golden-headed Cisticola
 Rufous Songlark
 Superb Fairy-wren
 Variegated Fairy-wren
 Southern Emu-wren
 White-browed Scrubwren
 Chestnut-rumped Hylacola
 Weebill
 Brown Gerygone
 Mangrove Gerygone
 White-throated Gerygone
 Brown Thornbill
 Buff-rumped Thornbill
 Striated Thornbill
 Yellow-rumped Thornbill
 Yellow Thornbill
 Varied Sittella
 White-throated Treecreeper
 Red-browed Treecreeper
 Brown Treecreeper
 Red Wattlebird
 Brush Wattlebird



Striped Honeyeater

Noisy Friarbird
 Blue-faced Honeyeater
 Lewin's Honeyeater
 Yellow-faced Honeyeater
 Yellow-tufted Honeyeater
 Brown-headed Honeyeater
 White-naped Honeyeater
 Brown Honeyeater
 New Holland Honeyeater
 White-cheeked Honeyeater
 Tawny-crowned Honeyeater
 Eastern Spinebill
 Scarlet Honeyeater
 White-fronted Chat
 Mistletoebird
 Spotted Pardalote
 Striated Pardalote
 Silveryeye
 House Sparrow
 Red-browed Finch
 Zebra Finch
 Double-barred Finch
 Chestnut-breasted Mannikin
 Common Starling
 Common Mynah
 Figbird
 Olive-backed Oriole
 Spangled Drongo
 Satin bowerbird
 White-winged Chough
 Australian Magpie-lark
 White-breasted Woodswallow
 Dusky Woodswallow
 Grey Butcherbird
 Pied Butcherbird
 Australian Magpie
 Pied Currawong
 Australian Raven
 Torresian Crow

PORT STEPHENS ABORIGINES

At the time of white settlement there were about 400 Aborigines living around the estuary of Port Stephens. The tribe had only 50 members in 1873. By 1900 there were very few tribal Aborigines left. White observers at that time left some descriptions of a lifestyle now mostly gone.

One observer wrote that the Port Stephens Aborigines were more prone to laughter than tears. They seemed always to regard life as a huge joke to be enjoyed to the utmost.

The local environment was favourable for hunter-gatherer living. Their non-destructive lifestyle was in such sympathy with the environment that it had already lasted

tens of thousands of years and would have continued long into the future if the white invasion had not taken place.

Their knowledge of the plants and animals about them has not been surpassed.

Canoes were made from the

bark of the stringybark tree (Punnah) *E. obliqua* or she oak. The ends were plugged with clay and when in use a fire always burned on a bed of clay at the back. Paddles made of seasoned hardwood were shaped like a large spoon and these paddles were used in a kneeling position from the middle of the 4.5m canoe. Fishing lines were made from the inner bark of young kurrajong trees or sally wattle twisted, and rendered watertight by soaking in the sap of the bloodwood tree. Women of the tribe had the first joint of their little finger removed to be dropped in the fishing grounds, so that fish would be attracted to that hand. It was forbidden to fish if you had just eaten fruit.

Fishing spears were made from the flowering stem of the Gymea Lily or the Grass Tree and tipped with 4 prongs of ironbark, the lot was held together with yellow gum (grass tree).

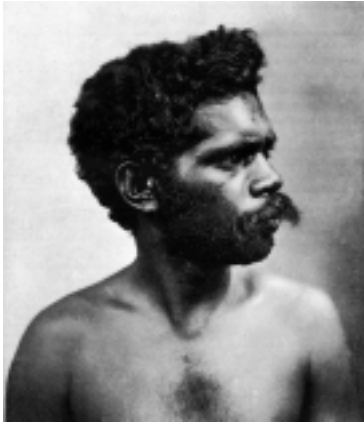
Port Stephens Aborigines were fatalistic. They feared attacks by the Myall River natives. All feared the demons of the night especially *Cooen* - a terrible invisible being. Fame Cove was taboo after dark.

Boomerangs were made from wild myrtle. The young flowering spikes of the gymea lily were roasted in the fire, after a long soaking in water. The wild cape gooseberries that grew on Cabbage Tree Island were highly sought after. Fern root and daisy yam were eaten when fish were scarce.

There are numerous Aboriginal relic sites in the area, the most obvious being the "canoe trees" at Little Beach. The exact location of the various sites is restricted information. In an area stretching from Wallis Lake to Newcastle there are 37 recorded Ceremonial sites (stone arrangements, bora grounds, carved trees and burial sites), 115 recorded campsites (mia mia, scarred tree, open campsite, shelter with deposit, well, fish trap, abraded grooves and quarries) and 97 middens. Four middens and a burial site are located at the base of Yacaaba Head. Middens are located at Fingal Spit, Anna Bay, Schnapper Point, Boat Harbour, Skate Bay and Fishermans Bay. There is a burial site at Skate Bay and grinding grooves at Morna Point. As sand moves and clearing continues new sites are discovered and old ones covered up.

Descendants of Port Stephens Aborigines still live in the area. The race has not gone nor is their culture dead.

"... exchange of articles sometimes took place between the coast-natives and those residing in the interior. Iron tomo-hawks, sea-shells, with which they scrape and sharpen their spears, and pieces of glass, which they use for that purpose whenever they can get them, were thus frequently exchanged for opossum skins, and sometimes for the belts of yarn ready manufactured, as well a small opossum band of net-work, which they wear on their forehead when in full dress. This article is beautifully manufactured, and appears the





more extraordinary, when it is considered that it is done entirely with the fingers, without the aid of needle or mesh. The opossums are more numerous inland than they are near the coast, and this is the reason why such an exchange takes place." [Dawson *The Present State of Australia* 1830 pp. 135-136]

Throughout the region the aborigines used bark to make their huts or "gunyers":

"bark was cut from Box or stringy bark trees by the Blacks who were very skilful and expeditious in doing it ... [it was] stripped off in one unbroken piece forming when stretched out flat a sheet from six to twelve feet square according to the size of the tree. To

prevent the bark from cracking when being thus stretched out it is heated inside with fire ...

When these dry sheets of bark retain their flat shape are from an inch to an inch and a half thick- quite impervious to rain and of course most useful in the construction of temporary dwellings."

[Eyre in Brayshaw *Aborigines of the Hunter Valley* pp59-60.]



Tea tree bark was also used to make small baskets or drinking vessels. Shields were made from both wood and bark and painted with pipe clay. The bark was hardened with fire. Boomerangs were made from iron bark or sometimes myrtle. On the coast spears for all purposes were usually made from lengths of grass tree (*Xanthorrhoea australis*) to which were affixed points of hard wood. Sometimes sharp



pieces of quartz or bone were stuck to the hard wood. It is believed that large number of these spears were traded with the inland aborigines in exchange for cord made from possum fur.

Throughout the region small axes were used to climb trees, to chop possums and other small animals and honey from logs or trees and also to remove bark. These were made from a heavy black stone, which were shaped to form a sharp edge. Gum or resin from the mimosa and grass tree was used in the manufacture of much aboriginal equipment.

Awls of kangaroo bone were used in sewing together possum and kangaroo skins to make cloaks with a thread of sinew. Materials from possum and kangaroos provided nearly everything that was worn by Aborigines in the Hunter.

Aborigines throughout the Hunter region made use of fire to attract game. The young tender grass that sprung up after the lighting of fires would attract kangaroos to feed. Fires were lit about a month before a proposed hunt. Aborigines carried fire sticks with them on most occasions. Fires were also used for signalling.

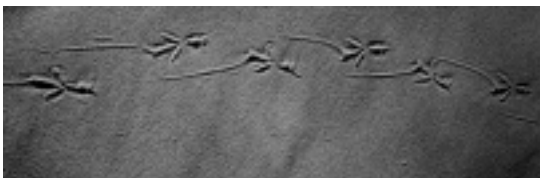
Tracks

You don't have to see an animal to know that it lives nearby. Most animals are nocturnal. They leave evidence of their passing on the sandy paths of the Tomaree Peninsula. Tracks are everywhere, and the nature of sand is such that nothing can cross it without leaving a mark. As a beginner you will have to have a clear distinctive track to be able to identify it. As your experience develops the general shape of a scratch will be all that is required for a positive identification. There is no better book to help you than 'Tracks, Scats and Other Traces' by Barbara Triggs.

KANGAROO tracks are deep, distinctive and everywhere.



RAVEN, MAGPIE & CURRAWONG leave these distinctive tracks all over the sand dunes of Samuari and Stockton Beaches.



BANDICOOT

tracks are much the same shape as kangaroo, but much smaller. The prints left by the front paws are nearly the same length as those made by the rear. In this area bandicoot tracks usually run across the fire trails, while kangaroo tracks more usually travel along the length of the fire trails.

Some time after a fox baiting programme bandicoots breed up and their tracks are numerous for the next two years. By the third year foxes have bred up and their tracks quickly outnumber the bandicoots.



ECHIDNA tracks are accompanied by zig-zag marks caused by the spines dragging along the ground. Note that the front feet point forward, while the claws on the rear feet point rearwards.



DOGS, FOXES & DINGOS have similar tracks as shown. Cat tracks are the same shape but smaller and the claws are seldom extended.



GOANNA.

When a goanna walks between trees it usually drags its tail, body and claws over the ground as well as leaving footprints. When running the tail may be lifted off the ground. You can tell the length of a goanna from its tracks by doubling the distance between footprints on the same side of the tail drag.



BRUSHTAIL POSSUM. Possums move about from treetop to treetop and are reluctant to come to ground. Brushtails do spend some time on the ground. Note that the rear feet are turned out, and the clawless first rear toe is opposed to the other four.

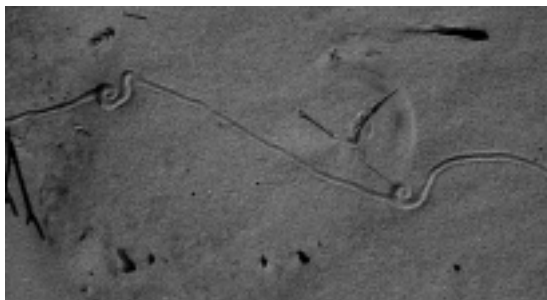


11 cm

KOALA tracks have the first and second toes of the front foot jutting out at an angle to the rest of the foot. The first toe on the rear foot is clawless.



ANTLION. This insect moves about underground leaving a distinctive trail which looks like the mark left when a stick is dragged along the ground. Usually the trail starts and finishes at a conical trap used to capture ants.



RECOMMENDED READING

To learn as much as you can about the local wildlife it is necessary to have a reference library as well as field guides. The following are all recommended.

1. Burnum Burnum's WILDthings Around Sydney, Sainty, Abell and Jacobs. A truly pocket-sized field guide that successfully covers the vast area of birds, animals, wildflowers, ferns, fungi, lichens, grasses, rainforests, sedges, weeds and trees. Flowers are grouped by colour. This book is a must.

2. Readers Digest Complete Book of Australian Birds, Readers Digest. Over 600 pages of superb photographs and thorough detail. Too big to carry into the bush but the best book of its kind.

3. Key Guide to Australian Wildflowers, Leonard Cronin, Reed. In this book 600 species of flowers are grouped by the number of petals they have. An excellent compliment to Burnum Burnum's.

4. The Australian Museum Complete Book of Australian Mammals edited by Ronald Strahan. Superb photographs and excellent details of all our native mammals.

5. Tracks, Scats and Other Traces, Barbara Triggs, Oxford. A unique guide to the tracks, skulls, burrows and droppings of most of our mammals.

6. Field Guide to the Native Plants of Sydney, Les Robinson, Kangaroo Press. After a couple of years of plant recognition you will be ready for this book. Plants are listed in their family groups and are illustrated by simple line drawings. If you can get close, this book will help you sort out the differences between similar species.

7. Wild Food, Wild Medicine, Useful Wild Plants in Australia, A.B. and J.W. Cribb, Fontana. These three books constitute the bible of Bush Tucker in Australia.

8. Australian Reptiles, S.K. Wilson and D.G. Knowles, Cornstalk. A photographic reference, with information about our reptiles.

9. An Introduction to Australian Insects, P.W. Hadlington and J.A. Johnson, N.S.W. University Press. There are thousands of insect species sharing our planet. This guide is a useful introduction to the various classes of insect life.

10. Beach Plants of South Eastern Australia, R. Carolin and P. Clarke, Sainty. This is the guide to have when you are at the ocean's edge.

11. Australian Spiders in Colour, R. Mascord, Reed. Colour photographs and descriptions of our most common spiders.



Bush Mates was first published in May 1994. One thousand copies were printed. This second edition (1000 copies) was printed in March 2001. I am indebted to the following artists for providing sketches.

Robin Furner (1)

Frank Future (3)

Adam Smith (9)

ACT Parks and Wildlife Service (10)

Judi Lea Sussams (32)

Michael Smith (459)

Thanks again to Dave Nunn for showing me my first flying duck orchid.

Index

A

ABORIGINES 126
Acrux 24
Albatross 87
ALDEBARAN 96
Alpheratz 80
Altair 72
AMBROSIA BEETLE 4
Amphibians 109
Angophora 90
ANTARES 56
Antechinus 55
ANTLION 30, 129
APPLE BERRY 55
Arcturus 48
AUSTRALIAN PELICAN 9
AUSTRALIAN RAVEN 3
AUSTRALIAN SALMON 9
Avior 32

B

BANDICOOT 59, 128
BANDY BANDY 94
Barnacle 81
BARNACLES 4
BEETLE 4
BAY DIAMOND BEETLE 61
BELL FROG 67
BENEFICIAL INSECTS 109
BENEFICIALINSECTS 109
Betelguese 16
BLACK CORMORANT 7
BLACK MARLIN 17
Black snake 77
BLACK-EYED SUSAN 75
BLACK-FACED CUCKOO SHRIKE 68
BLACK-TAILED NATIVE HEN 12
Blackboy 49
BLACKBUTT 10
BLACKFISH 38
Bladderwort 20
BLOODWOOD 33
RED BLOODWOOD 33
BLUE FINGERS 56
BLUE SWIMMER CRAB
BLUEBOTTLE 93
BOSSIAEA heterophylla 65
BREAM 31

BLACK BREAM 31
BROWN SNAKE 95
Brushtail possum 25
BRUSHTAIL POSSUM 129
BURRAWANG 23
Butcherbird 57

C

CANOE TREE 35
Canoe tree 10
Canopus 8
Case moth 85
Castor 16
CENTIPEDES 46
Chert 69
CHRISTMAS BELL 97
CHRISTMAS BUSH 95
CICADAS 86
CLEMATIS 54
CLIFF MINTBUSH 66
COAST BANKSIA
COAST MYALL 69
COAST ROSEMARY 10
COCKLE 82
Cockles 110
Cockroach 22
CONE SEED 70
CONESTICKS 9
Conospermum taxifolium 70
CORAL HEATH 27
CORAL PEA 35
CORMORANT 7
Corvus 40
Coulal 74
CRAB 6
Crayfish 51
CHANNEL-BILLED CUCKOO 67
Cuckoo-shrike 68
CURRAWONG 128
Currawong 52

D

DEATH ADDER 7
DEATH CAP 8
Deneb 72
DESTRUCTIVE INSECTS 86
Diamond beetle 61
DINGO 58

DOLPHIN 22
Donkey orchid 61
Double Tails 61
DRAGONFLIES 2
DRONE FLY
DRUMSTICKS 74
DUSKY MOORHEN 12
Dye colours 113

E

EAR SUNDEW 5
EARTH STAR 25
EARTHWORMS 18
ECHIDNA 57, 128
EELS 37
EGRET 4
Enif 80
Equinox 72

F

FAIRIES APRONS 20
Falcon 63
FAN FLOWER 51
FIVECORNERS 56
FLANNEL FLOWER 85
FLATHEAD 63
FLATWORM 27
FLAX LILY 59
FLEA 53
FLIES. 13
Fly Agaric 28
Flying fox 79
FOOD PLANTS 111
FOREST CLEMATIS 54
FORKED SUNDEW 10
Fragrant Flowers 113
Fragrant foliage 113
Fringe Lily 6
FRINGED VIOLET 6
Frogmouth 69
Frogs 108
Fruit bats 79

G

Gacrux 24
GALAH 60
Gannet 49
GHOST FUNGUS 18
Gienah 40
Glossodia minor. 87
GOANNA 75, 129

GOODENIA 3, 40
GOOSE BARNACLES 4
GRANNY'S BONNET 23
GRASS FROG 42
GRASS TREE 49
GRASSHOPPERS 13
GREEN AND GLODEN BELL FROG 67
Ground Orchids 111
GUINEA FLOWER 27
Gum 110
GYMEA LILY 77

H

Hadar 64
HEADACHE VINE 54
Heath Milkwort 96
Hexam Grey 11
Honey 110
Honey-myrtle 85
HOVEA 40
HOVER FLIES 86
HUMAN BEING 3
HYACINTH ORCHID 2

I

INKY CAP 12
INSECTS 109

J

JEWFISH 14
Juniper Wattle 25

K

KANGAROO 128
KANGAROOS. 84
KITE 29
KOALA 91, 129
KOEL 64
KOOKABURRA 59

L

Lace Monitor 75
LADIES' TRESSES 12
LADY'S SLIPPER 18
LEAFLESS TONGUE ORCHID 93
LEGLESS LIZARD 36
LOBELIA 95
LOBSTER 51
LONG-NECKED TORTOISE1
LORIKEET 26

M
 Macrozamia 23
 MAGPIE 66, 128
 Magpie Lark 10
 Mammal 107
 Mangrove Worms 110
 MANTIDS 94
 MARCH FLIES 19
 Markab 80
 MARLIN 17
 Mat rush 16
 MATCH STICKS 96
 MILKMAIDS 92
 MILLIPEDES 70
 Mirid bug 5
 MOORHEN 12
 Mopoke 67
 MOSQUITO 11
 MOUNTAIN DEVIL 17
 Mud Crab 110
 MUSHROOM 27
 MUTTONBIRD 71

N
 Native Cat 50
 NATIVE HEN 12
 NATIVE IRIS 79
 NATIVE LILAC 44
 NATIVE SARSAPARILLA 17
 NATIVE STATTUS 7
 NATIVE VIOLET 6
 Nectar 112
 NEW HOLLAND MOUSE 84

O
 Octopus 96
 OLD MAN BANKSIA 19
 Orb spiders 26
 Orchid Species 113
 Orion 16, 32
 OYSTERCATCHER 58
 Oysters 110

P
 PAPERBARK 28
 PARASOL MUSHROOM 50
 PRICKLY PARROT PEA 77
 PEEWEE 10
 PEGASUS 88
 Pegasus 80
 PELICAN 9

Penguin 54
 Phascogale 47
 Pied cormorant 7
 PIGFACE 13
 Pill bugs 97
 PINE HEATH 82
 PINK CORAL HEATH 27
 PINK FINGERS 65
 Pipis 110
 PIXIE CAPS 53
 Planisphere 101
 Plieades 96
 Pointers 64
 Pollux 16
 Portuguese man-o-war 93
 POSSUM 25
 PRAWNS 29
 Prickly Moses 25
 Prickly Wattle 25
 Procyon 32
 Prostanthera densa 66
 PUFF BALL 6
 PYGMY-POSSUM 41
 Python 69

Q
 Quoll 50

R
 RAINBOW LORIKEET 26
 Rasalhague 72
 RAVEN 128
 RECOMMENDED READING 130
 Reptiles 109
 Rigel 16, 17
 Rigil Kentaurus 64
 Ring-tail Possum
 Rosella 62
 RUFOUS WHISTLER 73
 Running Postman 57
 Rusty Gum 90

S
 SALMON 9
 SARSAPARILLA 17
 Saw-toothed Banksia 19
 SAWFLY 92
 SCENTED WATTLE 30
 SCORPIO 56
 SEA EAGLE 38
 SEASTARS 94

Seaweed 111
 SHAULA 56
 Shearwater 73
 SOOTY SHEARWATER 73
 SILVEREYE 34
 Sirius 32
 SKINK 31
 STRIPED SKINK 31
 SKIPPER BUTTERFLY 16
 SLATERS 97
 Slender Rice flower 23
 SMOKE BUSH 70
 SMOOTH-BARKED APPLE 90
 SNAILS 83
 Snakes 109
 SNAPPER 87
 SNOW WREATH 71
 SOLDIER CRABS 6
 Solstice 96
 SOUR CURRENT BUSH 72
 South Celestial Pole 24
 Southern Cross 24
 Southern right whale 43
 Spica 48
 SAINT ANDREW'S CROSS SPIDER 34
 Spiked Goodenia 3
 Spinebill 81
 Spitfire 92
 SPOTTED SUN ORCHID 83
 SQUID 79
 STAR-HAIRED GOODENIA 3
 Starfish 94
 STATTUS 7
 STONE SCRAPER 69
 Sulphur Donkey Orchid 61
 Summer Solstice 96
 SUN ORCHID 83
 SUNDEW 5, 10, 36
 Sundial 101
 SWAMP BANKSIA 25
 SYDNEY FUNNEL WEB SPIDER 21
 SYDNEY ROCK OYSTER 15
 SYMMOMUS SKIPPER BUTTERFLY 16

 T
 TAILOR 52
 TALL LOBELIA 95
 TEA 112
 Tea 112
 TERMITES 15

TERN 71
 TICK 92
 Tiger Cat 50
 TIGER MOTH 20
 TIGER ORCHID 61
 Time from the Southern Cross. 24
 TONGUE ORCHID 93
 TORTOISE 11
 Tracks 128
 Tree frog 73
 TRIGGER PLANT 90
 TWINING GUINEA FLOWER 27

V
 VANILLA PLANT 89
 Vega 72
 VIOLET 6

W
 WATTLEBIRD 42, 53
 WAX FLOWER 76
 Weather 121
 WEB SPIDER 26
 WEDDING BUSH 37
 Westerlies 121
 White-cheeked Honeyeater 23
 WHITING 74
 WILD TEAS 112
 WILLIE WAGTAIL 45
 Wind 121
 Winter Solstice 48
 Witchetty grubs 97
 WOMBAT 45
 WONGA WONGA VINE 58
 Wood lice 97
 WOODY PEAR 38
 WOOLLY FROGMOUTH 14
 Worm 18

X
 Xyris 5

Y
 YABBY 41
 YELLOW - FACED HONEYEATER 19
 YELLOW EYE 5

Z
 Zubenelgenubi 48
 Zubeneschamali 48

